VBOX-3110

In-Vehicle Computing

User's Manual

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From	To			
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1.0	1.1	Jan. 9, 2013	Dual SIM Card - Front Panel	Stanley Chou

In-Vehicle Computing
SINTRONES

SINTRONES® Technology Corp.

User Manual

Copyright

Disclaimer

SINTRONES® Technology Corp. shall not be liable for any incidental or consequential damages resulting from the performance or use of this product.

SINTRONES® Technology Corp. makes no representation or warranty regarding the content of this manual. Information in this manual had been carefully checked for accuracy;however, no guarantee is given as to the correctness of the contents. For continuing product improvement, SINTRONES® Technology Corp. reserves the right to revise the manual or make changes to the specifications of this product at any time without notice and obligation to any person or entity regarding such change. The information contained in this manual is provided for general use by customers.

This device complies to Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must withstand any background interference including those that may cause undesired operation.

Safety Information

Read the following precautions before setting up a SINTRONES Product.

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

CAUTION

Incorrectly replacing the battery may damage this computer. Replace only with the same or its equivalent as recommended by SINTRONES® Technology Corp. Dispose used battery according to the manufacturer's instructions.

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1 Function Introduction

■ 1.1 Model Specifications

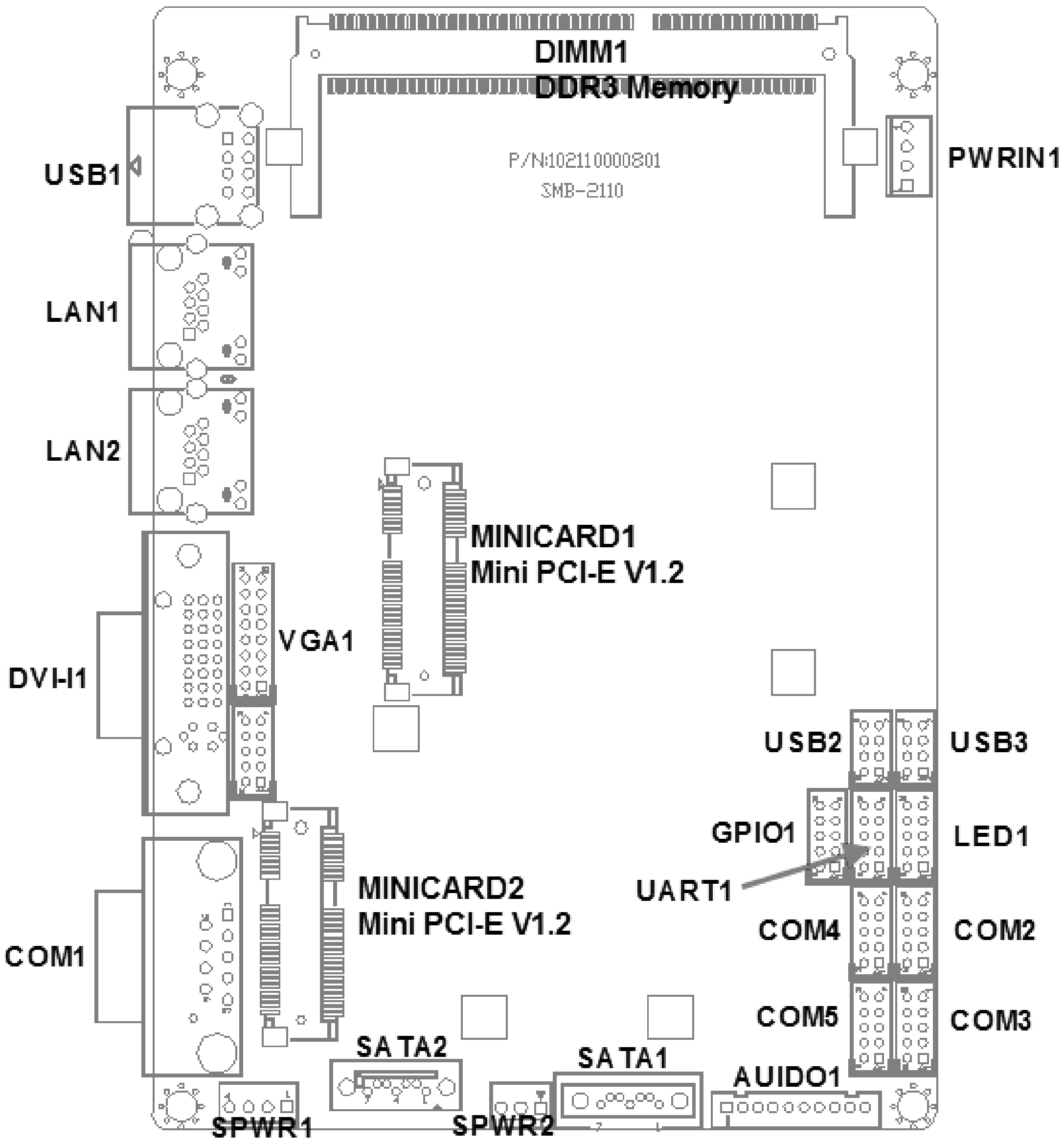


CPU	• Intel Cedarview Atom D2550 Dual Core 1.8GHz Processor
Chipset	• Intel NM10
Memory	• 1 x DDR3 1066MHz SO-DIMM up to 4GB
Graphics	• Intel GMA3650
ATA	• 2 x Serial ATA 2.0 Ports
LAN Chipset	• 2 x Realtek 8111E Gigabit Ethernet
Watchdog	• 1 ~ 255 level reset
Serial Port	• Suuport 2 x RS-232 (COM1 with RS-232/422/485)
USB Port	• 3 x USB 2.0 ports
LAN	• 2 x RJ45 ports for GbE
Video Port	• 1 x DVI-I Female Connector for DVI-D and VGA Output
GPIO Port	• Support 2 in and 2 out with Relay 12V / 100mA
Audio	• Mic-in/Line-out
Expansion Bus	• 3 x Mini-Card Slots
SIM Card Socket	• 2 x SIM Card sockets supported onboard with eject

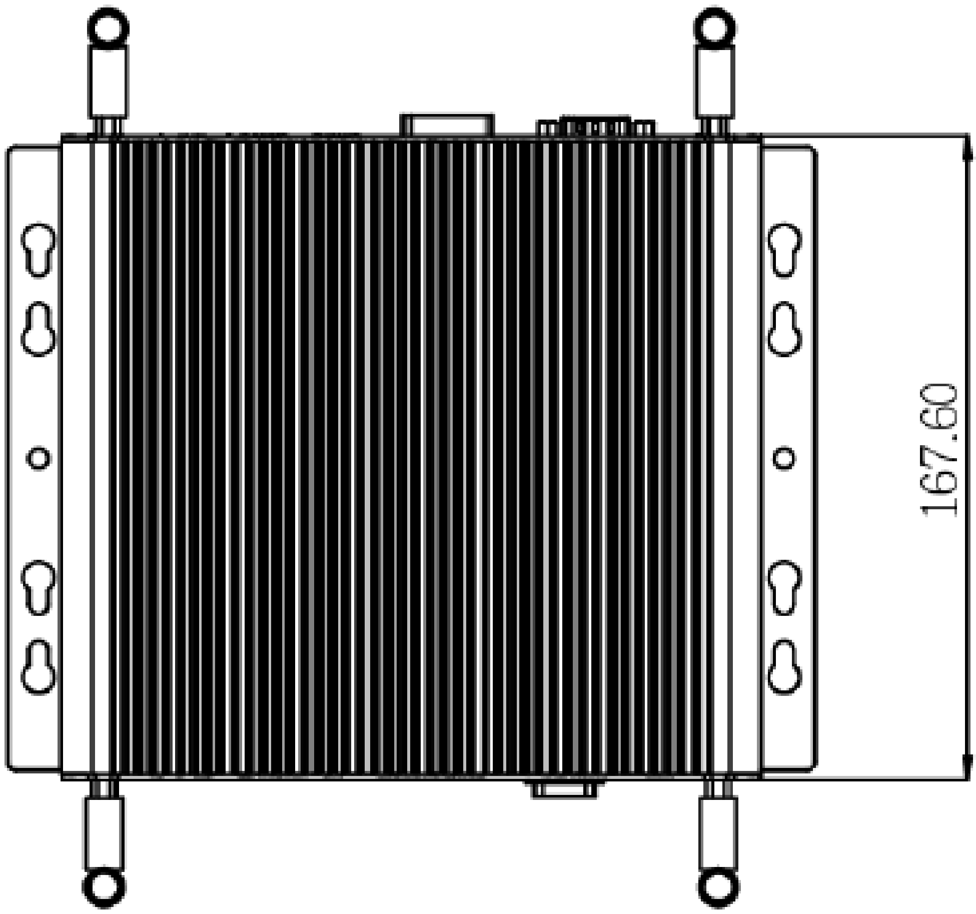
Antenna	• 4 x SMA-type External Antenna Connectors for WLAN / UMTS / GSM / GPRS / GPS / Bluetooth
Storage	• 1 x 2.5" drive bay for SATA Type Hard Disk Drive / SSD
	• 1 x SATA DOM
Qualification	• CE, FCC Class A, eMark Compliance
Power Input	• 9V - 32V DC Power Input
Power Management	• Vehicle Power Ignition for Variety Vehicle
Power Off Control	• Power off Delay Time Setting by Software, Default is 5 Mins
Backup Battery	• Internal Battery Kit for 10 Mins Operating (Optional)
Operating Temp.	• -40 ~ 70°C (SSD), ambient w/ air
Storage Temp.	• -40 ~ 80°C
Relative Humidity	• 10 ~ 90% (non-condensing)
Vibration	• MIL-STD-810F, Method 514.5, Category 20, Ground Vehicle-Highway
Truck Storage	• MIL-STD-810F, Method 514.5, Category 24, Integrity Test
Shock	• Operating : MIL-STD-810F, Method 516.5, Procedure I, Trucks and semi-trailers=40G (11ms) with 80G with SSD
Crash Hazard	• MIL-STD-810F, Method 516.5, Procedure V, Ground Equipment=100g
Construction	• Aluminum alloy
Mounting	• Supports both of wall-mount/VESA-mount
Weight	• 1406g
Dimensions	• 182 x 167.6 x 52 mm

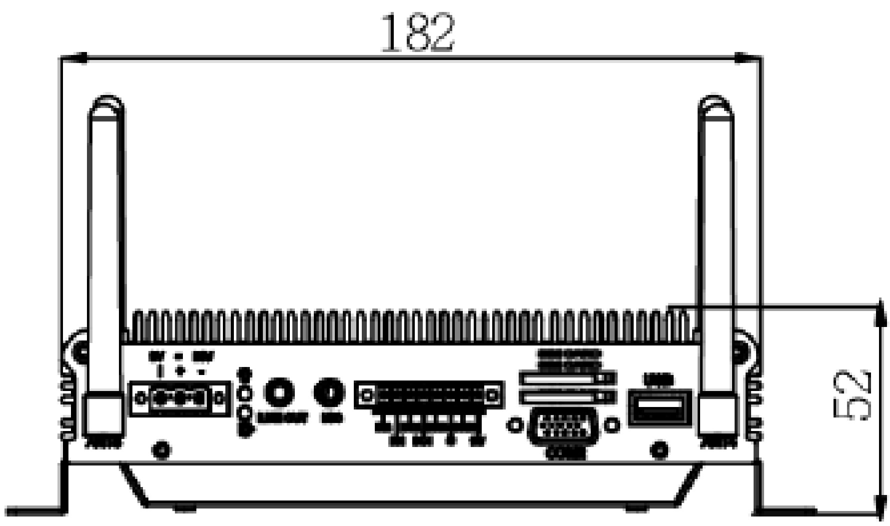
■ 1.2 VBOX-3110 Illustration

☞ **Mainboard**



☞ **System**

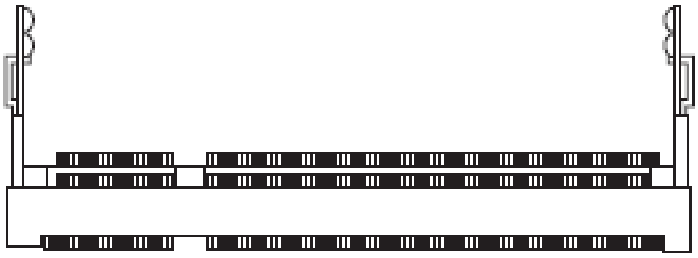




■ 1.3 Memory Module Installation

The VBOX-3110 provide one 204pins SODIMM slot for DDR3 1066MHz SDRAM memory modules and supports memory sizes up to 4GB.

These DIMM slots are inteded for memory modules.



DDR3 SO-DIMM Slot
204-pin, 1.5V

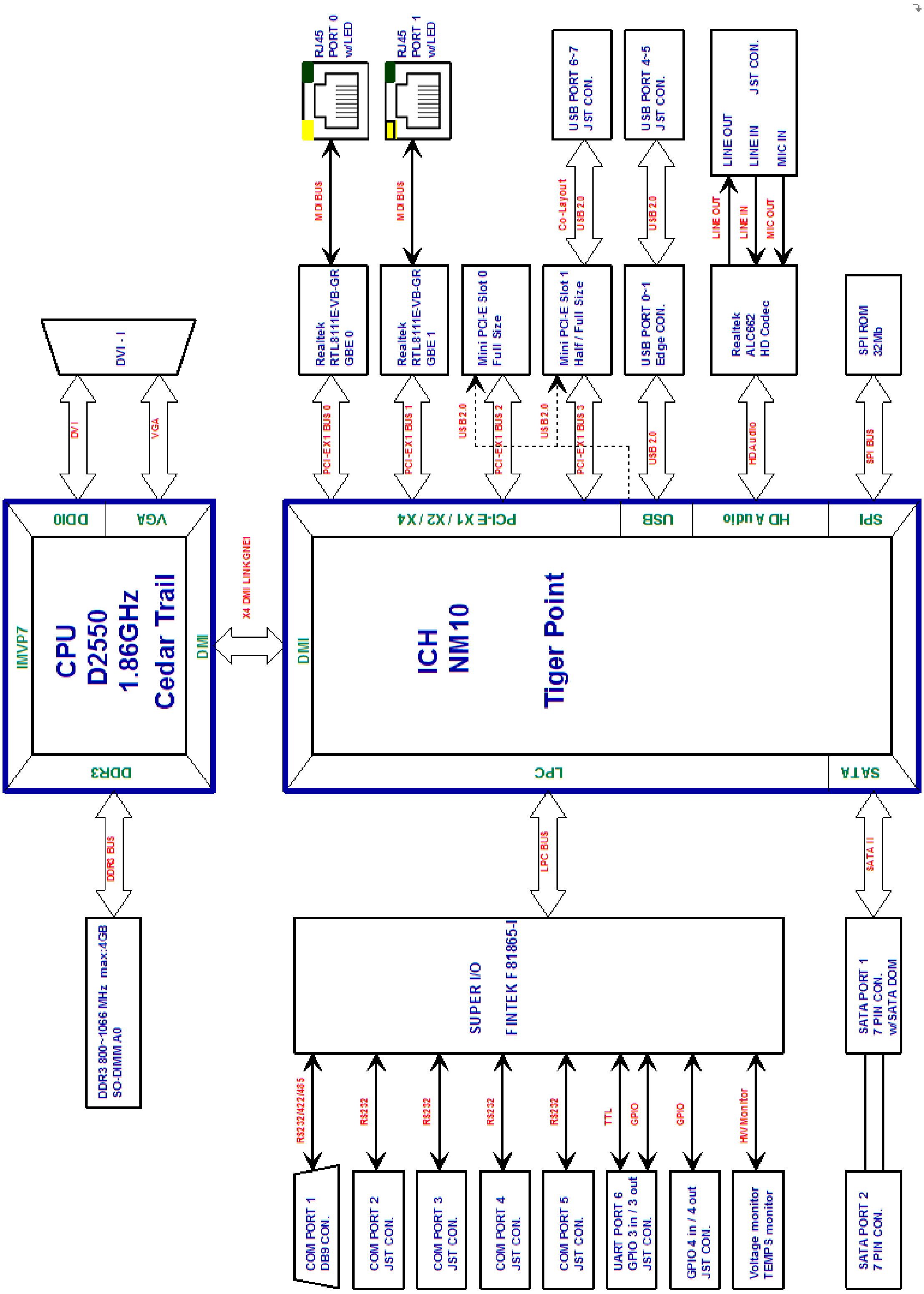
Installing Memory Module

1. Locate the DIMM1 SO-DIMM slot. Align the notch on the DIMM with the key on the slot and insert the DIMM into the slot at 45-degree angle.
2. Push the DIMM gently forwards until the slot levers click and lock the DIMM in place. Follow the same procedures to install the second DIMM if necessary.
3. To uninstall the DIMM, flip the slot levers outwards and the DIMM will be released instantly.

Important

You can barely see the golden finger if the DIMM is properly inserted in the DIMM slot.

■ 1.4 Architecture



■ 1.5 Principal Component Specification

CPU

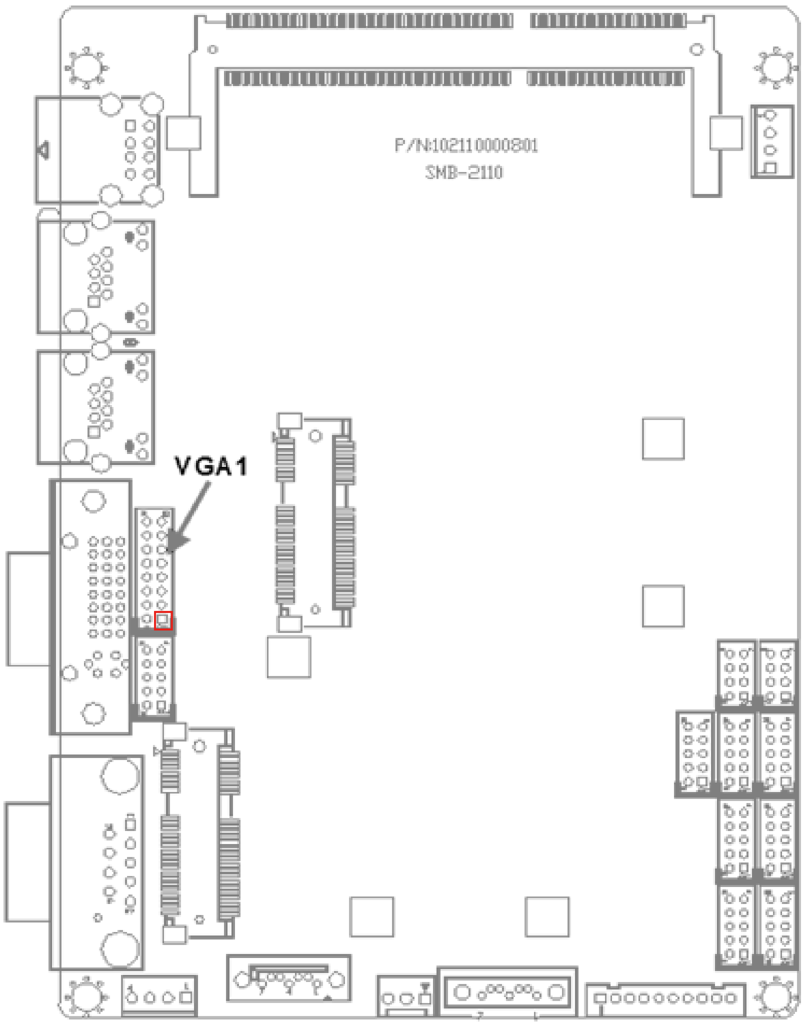
Chip	Description
Intel	1. Power consumption:

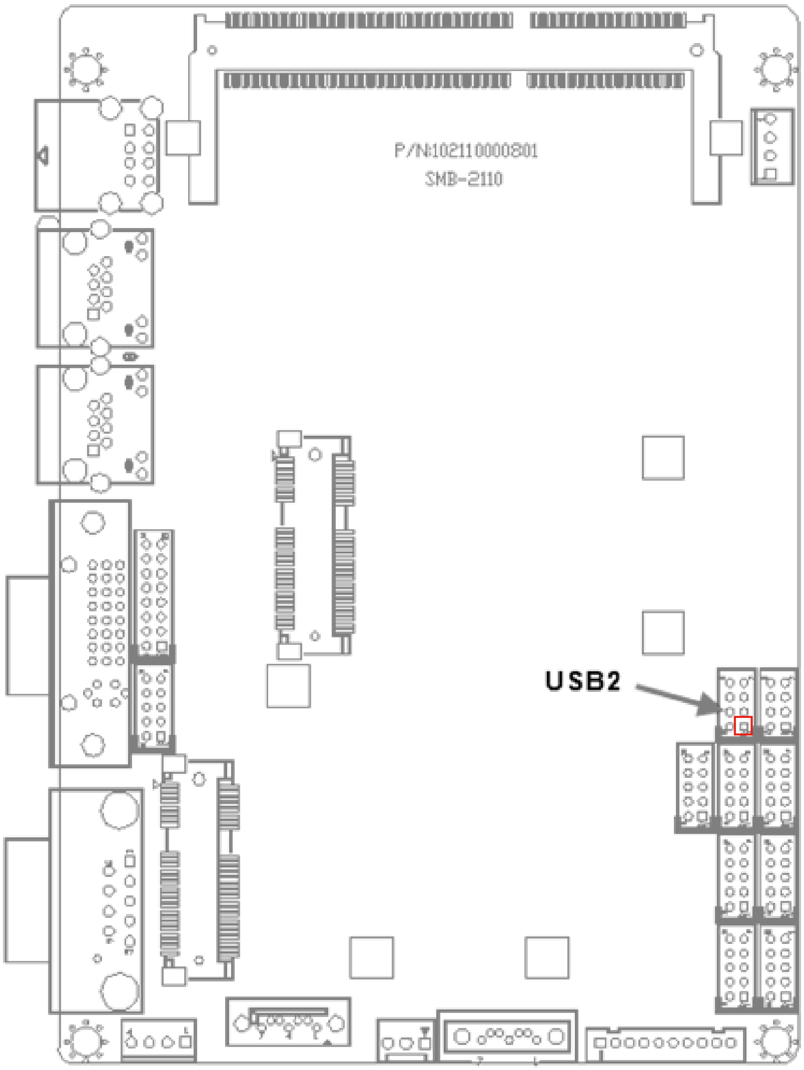
Symbol	Processor Number	Core Frequency/ GHz	Thermal Design Power	Unit	Tj min (°C)	Tj max (°C)	Notes
TDP	N2600	1.86 - 1.6	<=3.5	W	0	100	
	N2800	2.13 - 1.86	<=6.5	W		100	
	D2500	2.13 - 1.86	<=10	W		100	
	D2700	2.4 - 2.13	<=10	W		100	
Symbol	Parameter		Max	Unit			
$P_{AVERAGE}$	N2600		~1.25	W	0	50	
	N2800		~1.7	W			
P_{IDLE}	D2500		TBD	W	0	50	
	D2700		~2.7	W			

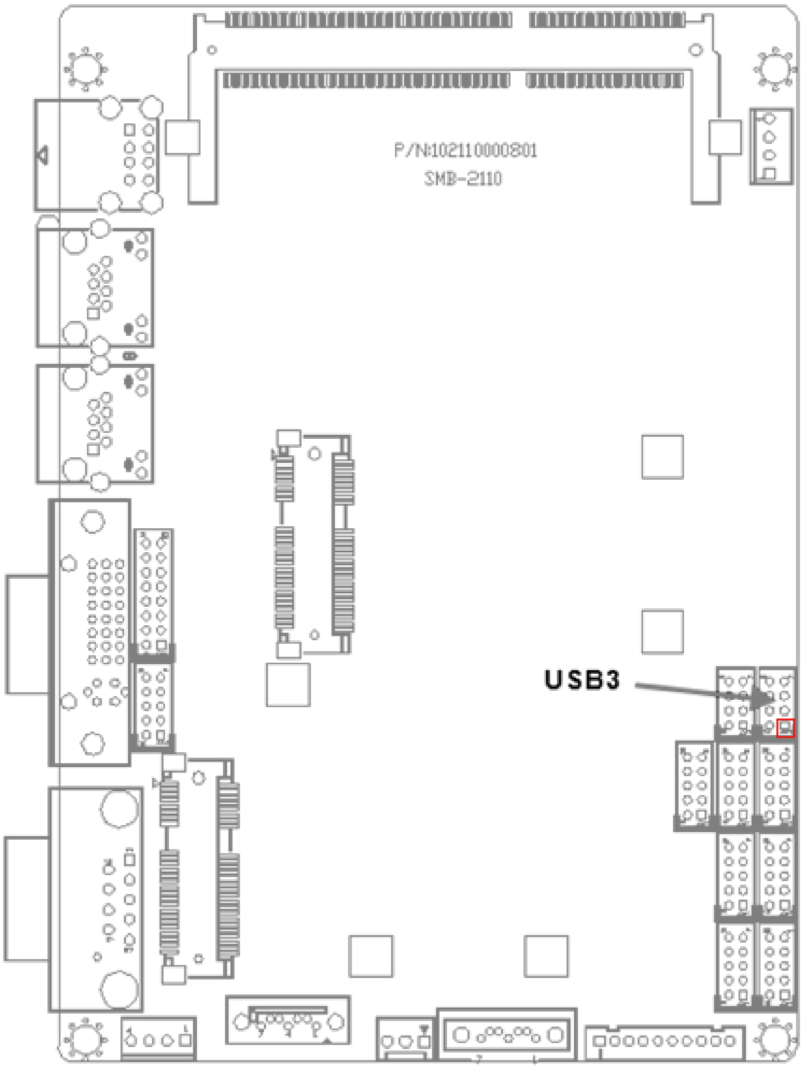
South Bridge

Chip	Description
Intel NM10	1. Power consumption: 2.1W

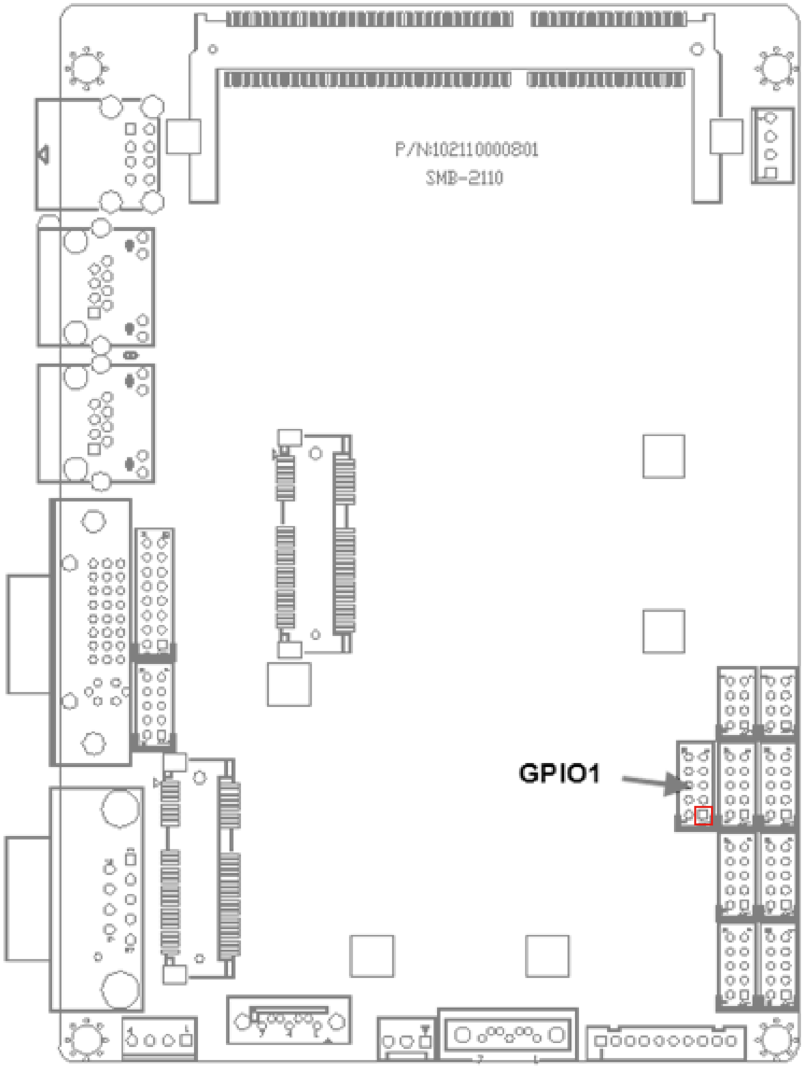
■ 1.6 Internal connector specification

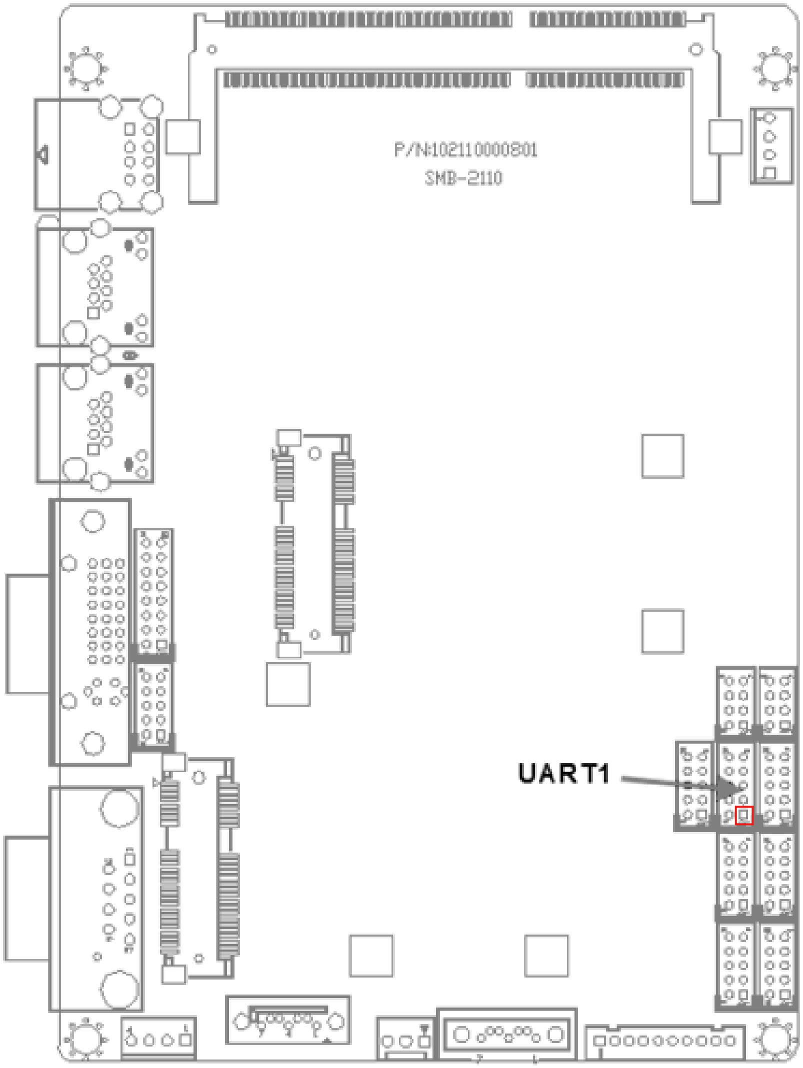
<table>
<tr><th colspan="5">VGA connector</th></tr>
<tr><td>Connector size</td><td colspan="4">2 X 8 = 16 Pin</td></tr>
<tr><td>Connector type</td><td colspan="4">JST-2.0mm-M-180</td></tr>
<tr><td>Connector location</td><td colspan="4">VGA1</td></tr>
<tr><td rowspan="9">Connector pin definition</td><td>Pin</td><td>Signal</td><td>Pin</td><td>Signal</td></tr>
<tr><td>1</td><td>RED</td><td>2</td><td>GREEN</td></tr>
<tr><td>3</td><td>BLUE</td><td>4</td><td>NC</td></tr>
<tr><td>5</td><td>CER_DET</td><td>6</td><td>GND</td></tr>
<tr><td>7</td><td>GND</td><td>8</td><td>GND</td></tr>
<tr><td>9</td><td>+5V</td><td>10</td><td>GND</td></tr>
<tr><td>11</td><td>NC</td><td>12</td><td>DAC_SDA</td></tr>
<tr><td>13</td><td>HSYNC</td><td>14</td><td>VSYNC</td></tr>
<tr><td>15</td><td>DAC_SCL</td><td>16</td><td>NC</td></tr>
<tr><td>Connector map</td><td colspan="4">
</td></tr>
</table>

<table>
<tr><th colspan="2">USB connector</th></tr>
<tr><td>Connector size</td><td>2 X 4 = 8 Pin</td></tr>
<tr><td>Connector type</td><td>JST-2.0mm-M-180</td></tr>
<tr><td>Connector location</td><td>USB2</td></tr>
<tr><td>Connector pin definition</td><td>
<table>
<tr><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>5VSB</td><td>2</td><td>5VSB</td></tr>
<tr><td>3</td><td>USB1_N</td><td>4</td><td>USB2_N</td></tr>
<tr><td>5</td><td>USB1_P</td><td>6</td><td>USB2_P</td></tr>
<tr><td>7</td><td>GND</td><td>8</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td>Connector map</td><td>
</td></tr>
</table>

<table>
<tr><th colspan="2">USB connector</th></tr>
<tr><td>Connector size</td><td>2 X 4 = 8 Pin</td></tr>
<tr><td>Connector type</td><td>JST-2.0mm-M-180</td></tr>
<tr><td>Connector location</td><td>USB3</td></tr>
<tr><td>Connector pin definition</td><td>
<table>
<tr><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>5VSB</td><td>2</td><td>5VSB</td></tr>
<tr><td>3</td><td>USB4_N</td><td>4</td><td>NC/ USB6_N</td></tr>
<tr><td>5</td><td>USB4_P</td><td>6</td><td>NC/ USB6_P</td></tr>
<tr><td>7</td><td>GND</td><td>8</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td>Connector map</td><td>


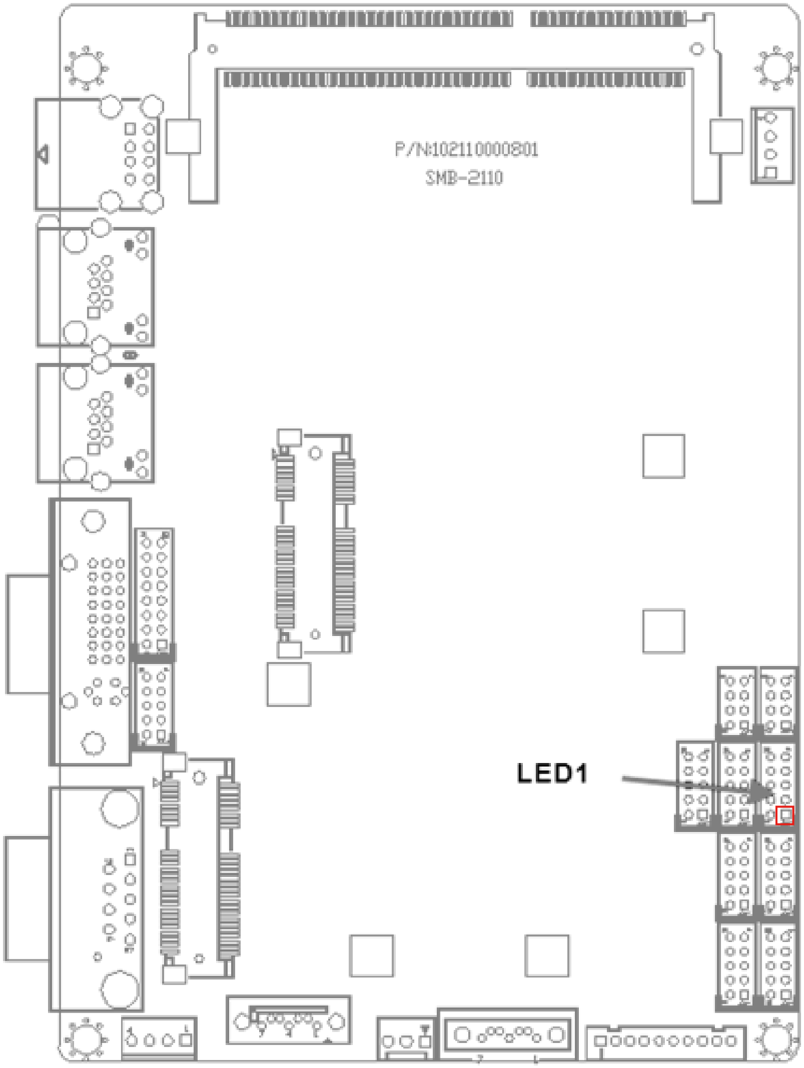
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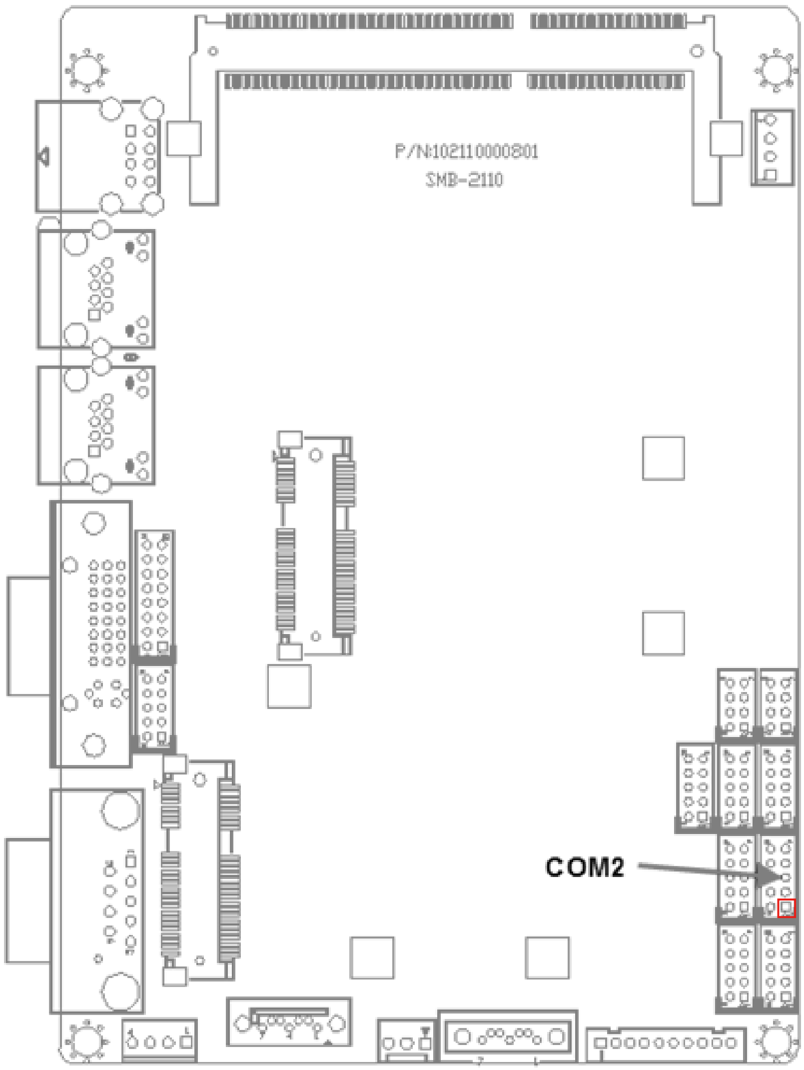
GPIO connector				
Connector size	2 X 5 = 10 Pin			
Connector type	JST-2.0mm-M-180			
Connector location	**GPIO1**			
Connector pin definition	Pin	Signal	Pin	Signal
	1	GND	2	+5V
	3	GPI0	4	GPO0
	5	GPI1	6	GPO1
	7	GPI2	8	GPO2
	9	GPI3	10	GPO3
Connector map				

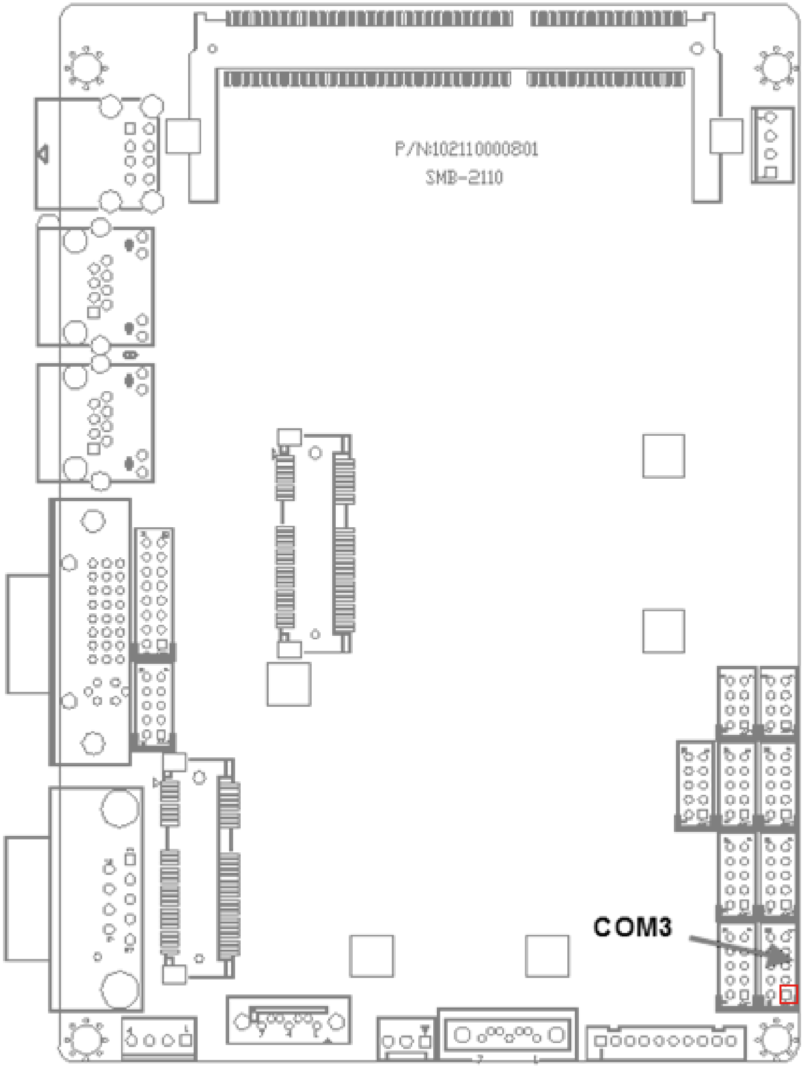
UART and GPIO connector	
Connector size	2 X 5 = 10 Pin
Connector type	JST-2.0mm-M-180
Connector location	**UART1**
Connector pin definition	(see table below)
Connector map	

Connector pin definition:

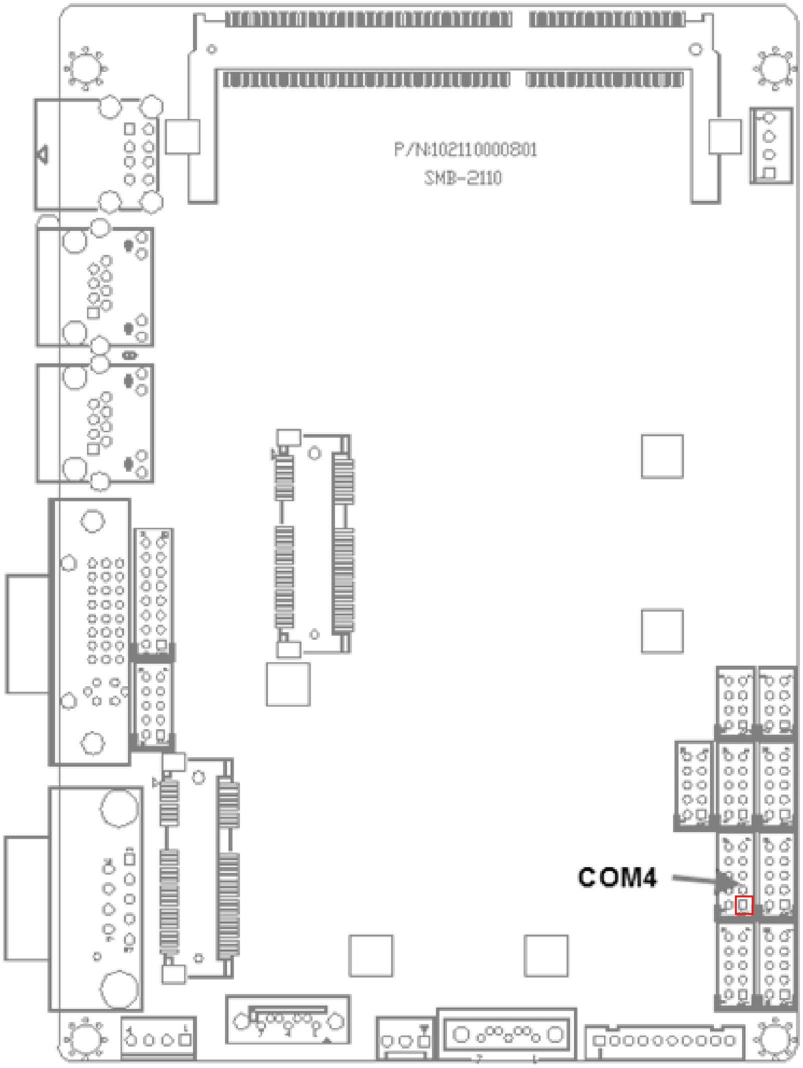
Pin	Signal	Pin	Signal
1	GPIO0	2	COM6_RX
3	COM6_TX	4	GPIO4
5	GND	6	GPIO3
7	GPIO1	8	GND
9	GPIO2	10	+5V

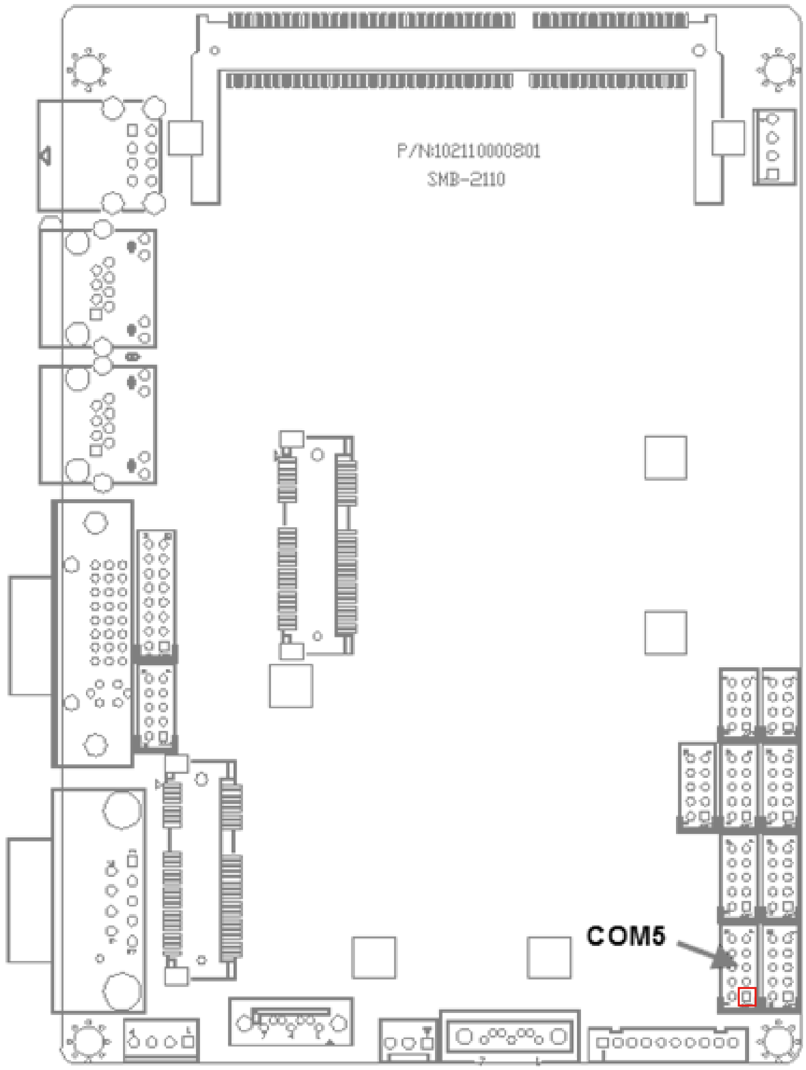
<table>
<tr><th colspan="2">LED connector</th></tr>
<tr><td>Connector size</td><td>2 X 5 = 10 Pin</td></tr>
<tr><td>Connector type</td><td>JST-2.0mm-M-180</td></tr>
<tr><td>Connector location</td><td>LED1</td></tr>
<tr><td>Connector pin definition</td><td>
<table>
<tr><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>HDD_LED_N</td><td>2</td><td>HDD_LED_P</td></tr>
<tr><td>3</td><td>PWR_LED_N</td><td>4</td><td>PWR_LED_P</td></tr>
<tr><td>5</td><td>GND</td><td>6</td><td>PWRBT#</td></tr>
<tr><td>7</td><td>GND</td><td>8</td><td>HW_RESET#</td></tr>
<tr><td>9</td><td>SMB_CLK</td><td>10</td><td>SMB_DATA</td></tr>
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<tr><td>Connector map</td><td>
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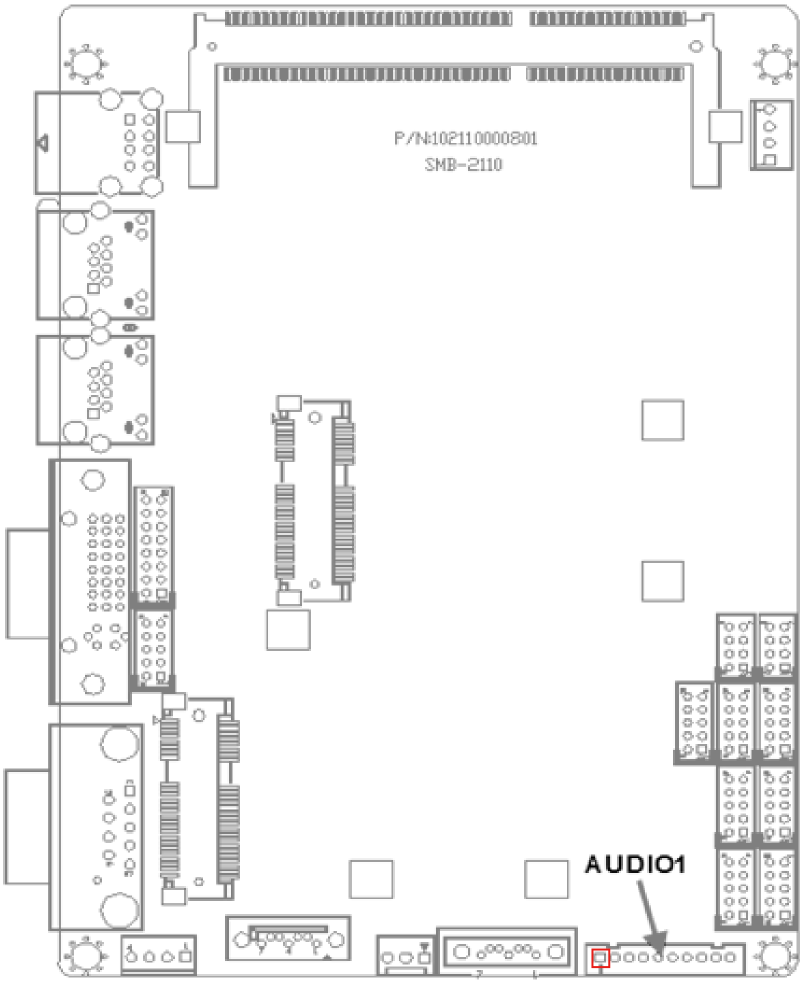
<table>
<tr><th colspan="2">COM connector</th></tr>
<tr><td>Connector size</td><td>2 X 5 = 10 Pin</td></tr>
<tr><td>Connector type</td><td>JST-2.0mm-M-180</td></tr>
<tr><td>Connector location</td><td>COM2</td></tr>
<tr><td>Connector pin definition</td><td>
<table>
<tr><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>COM2_DCD</td><td>2</td><td>COM2_RXD</td></tr>
<tr><td>3</td><td>COM2_TXD</td><td>4</td><td>COM2_DTR</td></tr>
<tr><td>5</td><td>GND</td><td>6</td><td>COM2_DSR</td></tr>
<tr><td>7</td><td>COM2_RTS</td><td>8</td><td>COM2_CTS</td></tr>
<tr><td>9</td><td>COM2_RI</td><td>10</td><td>GND</td></tr>
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</td></tr>
<tr><td>Connector map</td><td>
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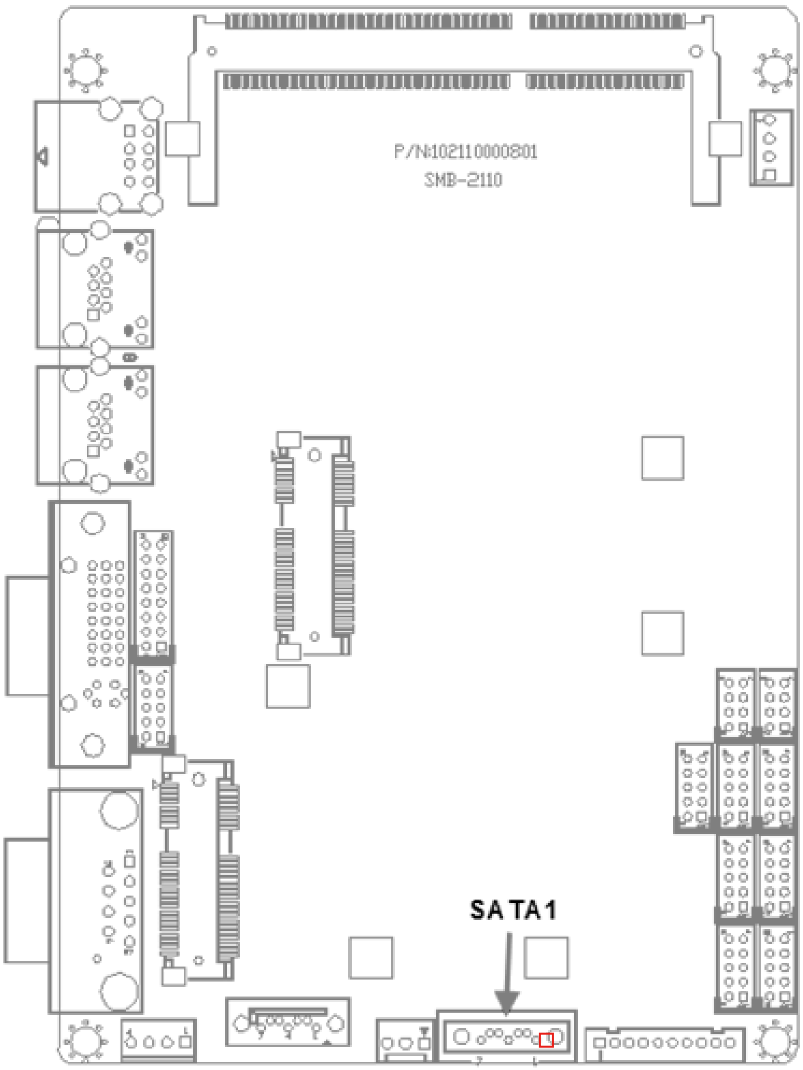
<table>
<tr><th colspan="2">COM connector</th></tr>
<tr><td>Connector size</td><td>2 X 5 = 10 Pin</td></tr>
<tr><td>Connector type</td><td>JST-2.0mm-M-180</td></tr>
<tr><td>Connector location</td><td>COM3</td></tr>
<tr><td>Connector pin definition</td><td>
<table>
<tr><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>COM3_DCD</td><td>2</td><td>COM3_RXD</td></tr>
<tr><td>3</td><td>COM3_TXD</td><td>4</td><td>COM3_DTR</td></tr>
<tr><td>5</td><td>GND</td><td>6</td><td>COM3_DSR</td></tr>
<tr><td>7</td><td>COM3_RTS</td><td>8</td><td>COM3_CTS</td></tr>
<tr><td>9</td><td>COM3_RI</td><td>10</td><td>GND</td></tr>
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<tr><td>Connector map</td><td>


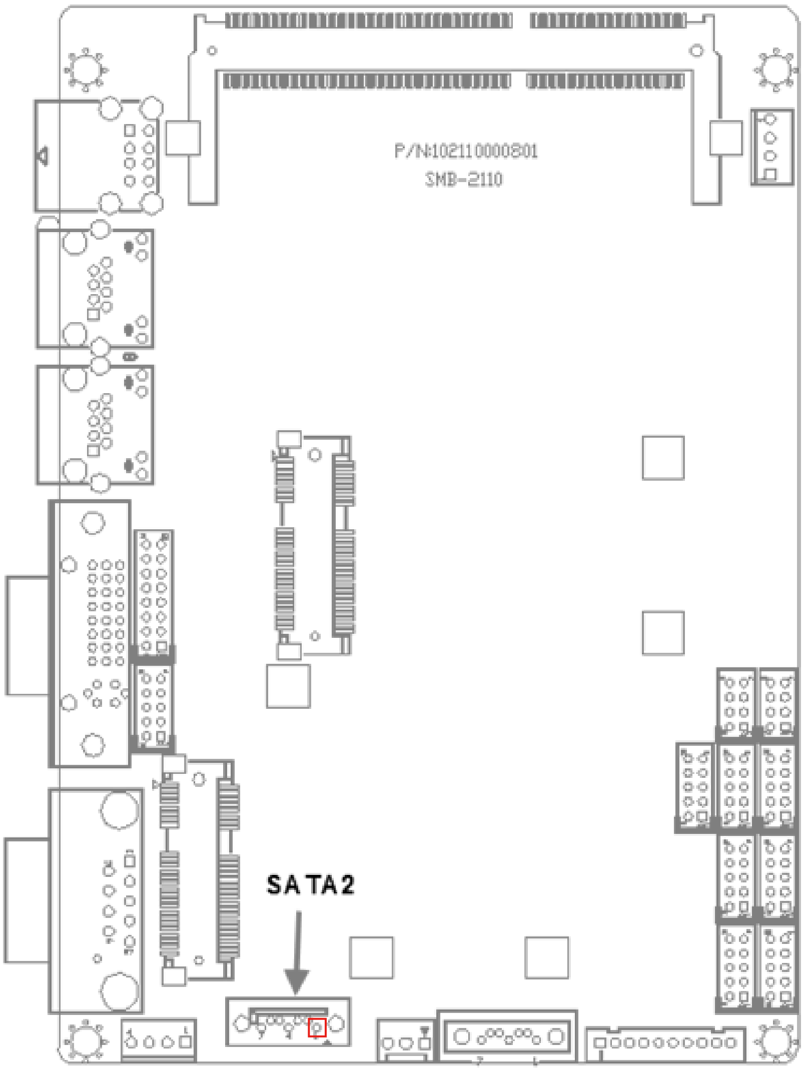
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<table>
<tr><th colspan="2">COM connector</th></tr>
<tr><td>Connector size</td><td>2 X 5 = 10 Pin</td></tr>
<tr><td>Connector type</td><td>JST-2.0mm-M-180</td></tr>
<tr><td>Connector location</td><td>COM4</td></tr>
<tr><td>Connector pin definition</td><td>
<table>
<tr><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>COM4_DCD</td><td>2</td><td>COM4_RXD</td></tr>
<tr><td>3</td><td>COM4_TXD</td><td>4</td><td>COM4_DTR</td></tr>
<tr><td>5</td><td>GND</td><td>6</td><td>COM4_DSR</td></tr>
<tr><td>7</td><td>COM4_RTS</td><td>8</td><td>COM4_CTS</td></tr>
<tr><td>9</td><td>COM4_RI</td><td>10</td><td>GND</td></tr>
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<tr><td>Connector map</td><td>
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<table>
<tr><th colspan="2">COM connector</th></tr>
<tr><td>Connector size</td><td>2 X 5 = 10 Pin</td></tr>
<tr><td>Connector type</td><td>JST-2.0mm-M-180</td></tr>
<tr><td>Connector location</td><td>COM5</td></tr>
<tr><td>Connector pin definition</td><td>
<table>
<tr><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>COM5_DCD</td><td>2</td><td>COM5_RXD</td></tr>
<tr><td>3</td><td>COM5_TXD</td><td>4</td><td>COM5_DTR</td></tr>
<tr><td>5</td><td>GND</td><td>6</td><td>COM5_DSR</td></tr>
<tr><td>7</td><td>COM5_RTS</td><td>8</td><td>COM5_CTS</td></tr>
<tr><td>9</td><td>COM5_RI</td><td>10</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td>Connector map</td><td>
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<table>
<tr><th colspan="2">AUDIO connector</th></tr>
<tr><td>Connector size</td><td>1 X 10 = 10 Pin</td></tr>
<tr><td>Connector type</td><td>JST-2.0mm-M-180</td></tr>
<tr><td>Connector location</td><td>AUDIO1</td></tr>
<tr><td>Connector pin definition</td><td>
<table>
<tr><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>FRONT_OUT_L</td></tr>
<tr><td>2</td><td>FRONT_OUT_R</td></tr>
<tr><td>3</td><td>FRONT-JD</td></tr>
<tr><td>4</td><td>LINE_IN_L</td></tr>
<tr><td>5</td><td>LINE_IN _R</td></tr>
<tr><td>6</td><td>LINE-JD</td></tr>
<tr><td>7</td><td>MIC_IN_ L</td></tr>
<tr><td>8</td><td>MIC_IN_R</td></tr>
<tr><td>9</td><td>MIC-JD</td></tr>
<tr><td>10</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td>Connector map</td><td>
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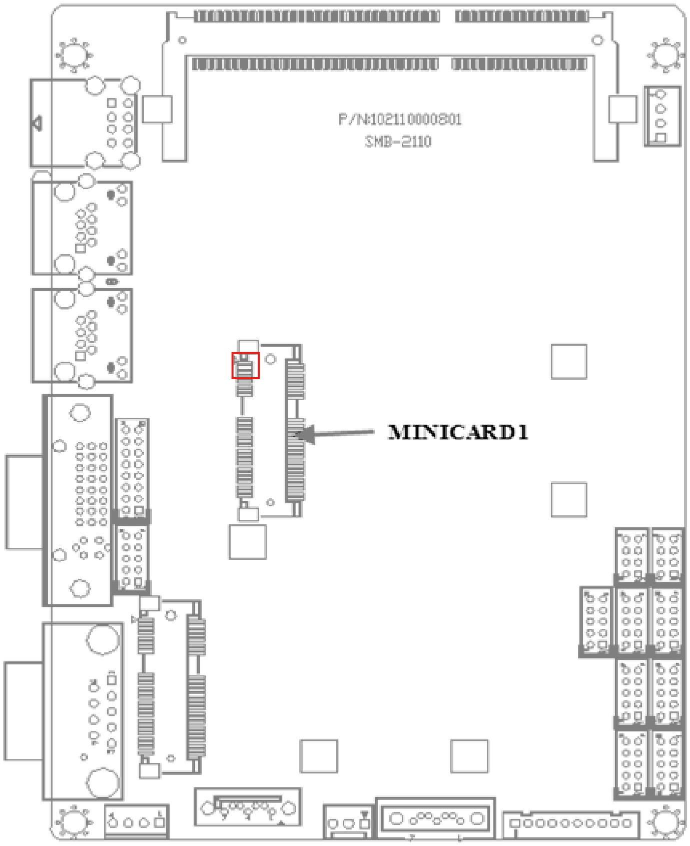
SATA connector		
Connector size	1 X 7 = 7 Pin	
Connector type	SATA 1.27mm-M-180D	
Connector location	**SATA1**	
Connector pin definition	Pin	Signal
	1	GND
	2	SATA_TXP0
	3	SATA_TXN0
	4	GND
	5	SATA_RXN0
	6	SATA_RXP0
	7	GND
Connector map		

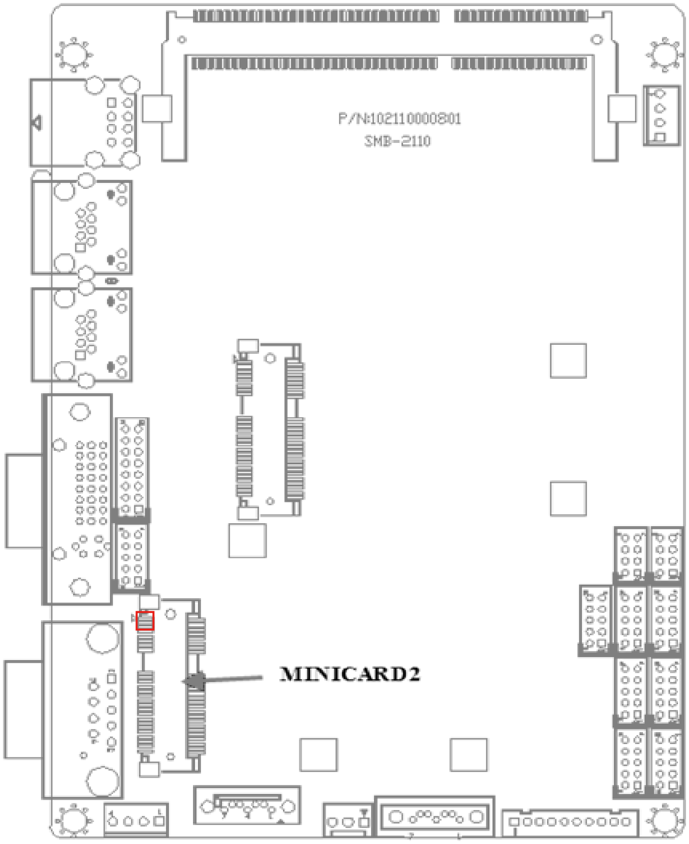
SATA connector		
Connector size	1 X 7 = 7 Pin	
Connector type	SATA 1.27mm-M-180D	
Connector location	**SATA2**	
Connector pin definition	**Pin**	**Signal**
	1	GND
	2	SATA_TXP1
	3	SATA_TXN1
	4	GND
	5	SATA_RXN1
	6	SATA_RXP1
	7	GND
Connector map		

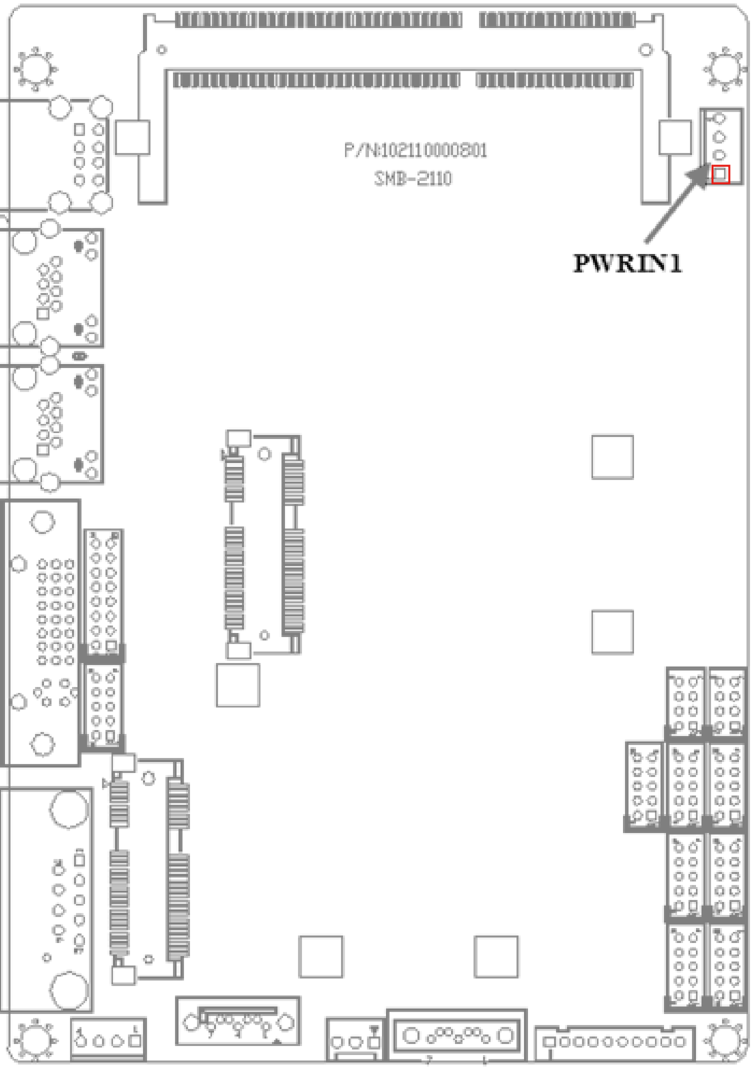
Mini PCI-E connector	
Connector size	2 X 26 = 52 Pin
Connector type	MINI PCI-E CON 9.2mmH
Connector location	**MINICARD1**
Connector pin definition	

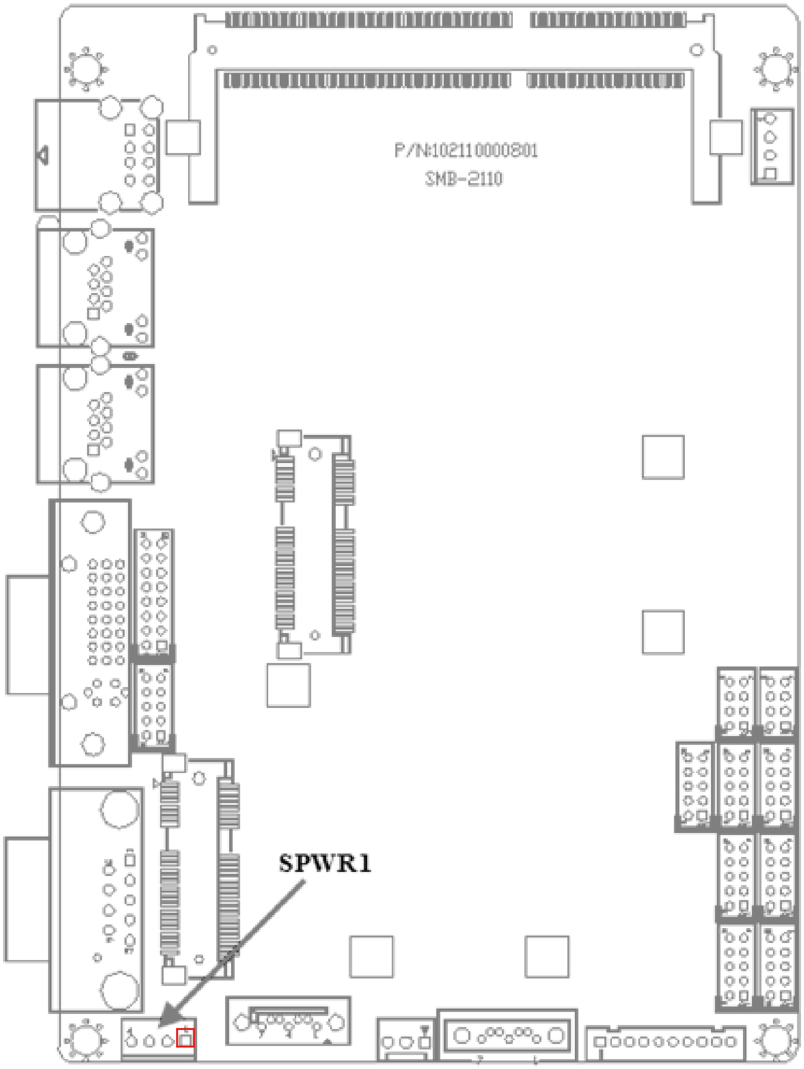
Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	3VSB
3	NC	4	GND
5	NC	6	+1.5V
7	MINICARD0_CLKREQ#	8	NC
9	GND	10	NC
11	PCIE_MCARD0_CLK_N	12	NC
13	PCIE_MCARD0_CLK_P	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	MINICARD0_DIS#
21	GND	22	PCIE_RST#
23	PCIE_MCARD0_RX_N	24	3VSB
25	PCIE_MCARD0_RX_P	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_MCARD0_TX_N	32	SMB_DATA
33	PCIE_MCARD0_TX_P	34	GND
35	GND	36	USB_6N
37	GND	38	USB_6P
39	3VSB	40	GND
41	3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	NC	52	3VSB

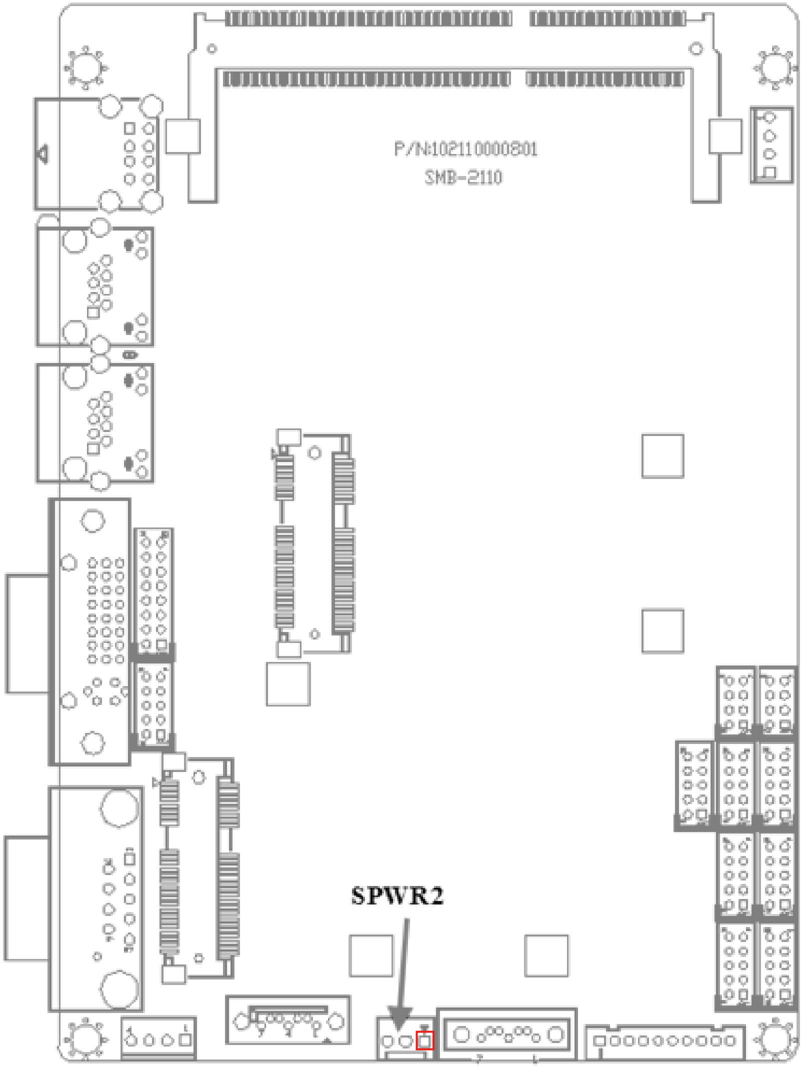
Connector map



Mini PCI-E connector				
Connector size	2 X 26 = 52 Pin			
Connector type	MINI PCI-E CON 9.2mmH			
Connector location	**MINICARD2**			
Connector pin definition	**Pin**	**Signal**	**Pin**	**Signal**
	1	PCIE_WAKE#	2	3VSB
	3	NC	4	GND
	5	NC	6	+1.5V
	7	MINICARD1_CLKREQ#	8	NC
	9	GND	10	NC
	11	PCIE_MCARD1_CLK_N	12	NC
	13	PCIE_MCARD1_CLK_P	14	NC
	15	GND	16	NC
	17	NC	18	GND
	19	NC	20	MINICARD1_DIS#
	21	GND	22	PCIE_RST#
	23	PCIE_MCARD1_RX_N	24	3VSB
	25	PCIE_MCARD1_RX_P	26	GND
	27	GND	28	+1.5V
	29	GND	30	SMB_CLK
	31	PCIE_MCARD1_TX_N	32	SMB_DATA
	33	PCIE_MCARD1_TX_P	34	GND
	35	GND	36	USB_5N
	37	GND	38	USB_5P
	39	3VSB	40	GND
	41	3VSB	42	NC
	43	GND	44	NC
	45	NC	46	NC
	47	NC	48	+1.5V
	49	NC	50	GND
	51	NC	52	3VSB
Connector map				

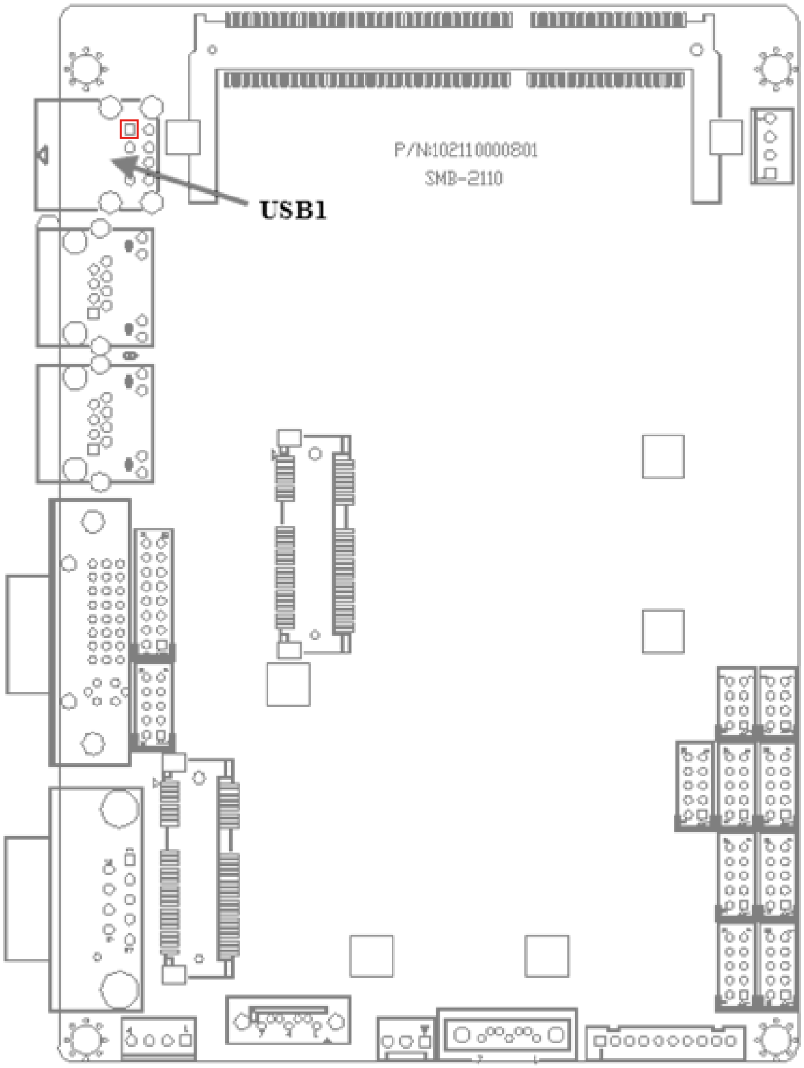
POWER Input connector		
Connector size	1 X 4 = 4 Pin	
Connector type	WAFER 2.54mm-M-180	
Connector location	**PWRIN1**	
Connector pin definition	**Pin**	**Signal**
	1	+12VSB
	2	+12VSB
	3	GND
	4	GND
Connector map		

<table>
<tr><th colspan="3">SATA power connector</th></tr>
<tr><td>Connector size</td><td colspan="2">1 X 4 = 4 Pin</td></tr>
<tr><td>Connector type</td><td colspan="2">WAFER 2.54mm-M-180</td></tr>
<tr><td>Connector location</td><td colspan="2">SPWR1</td></tr>
<tr><td rowspan="5">Connector pin definition</td><td>Pin</td><td>Signal</td></tr>
<tr><td>1</td><td>+5V</td></tr>
<tr><td>2</td><td>GND</td></tr>
<tr><td>3</td><td>GND</td></tr>
<tr><td>4</td><td>+12V</td></tr>
<tr><td>Connector map</td><td colspan="2">
</td></tr>
</table>

4.18 SATA power connector	
Connector size	1 X 3 = 3 Pin
Connector type	WAFER 2.54mm-M-180
Connector location	**SPWR2**
Connector pin definition	Pin / Signal: 1 = +12V; 2 = +5V; 3 = GND
Connector map	

Pin	Signal
1	+12V
2	+5V
3	GND

■ 1.7 External connector specification

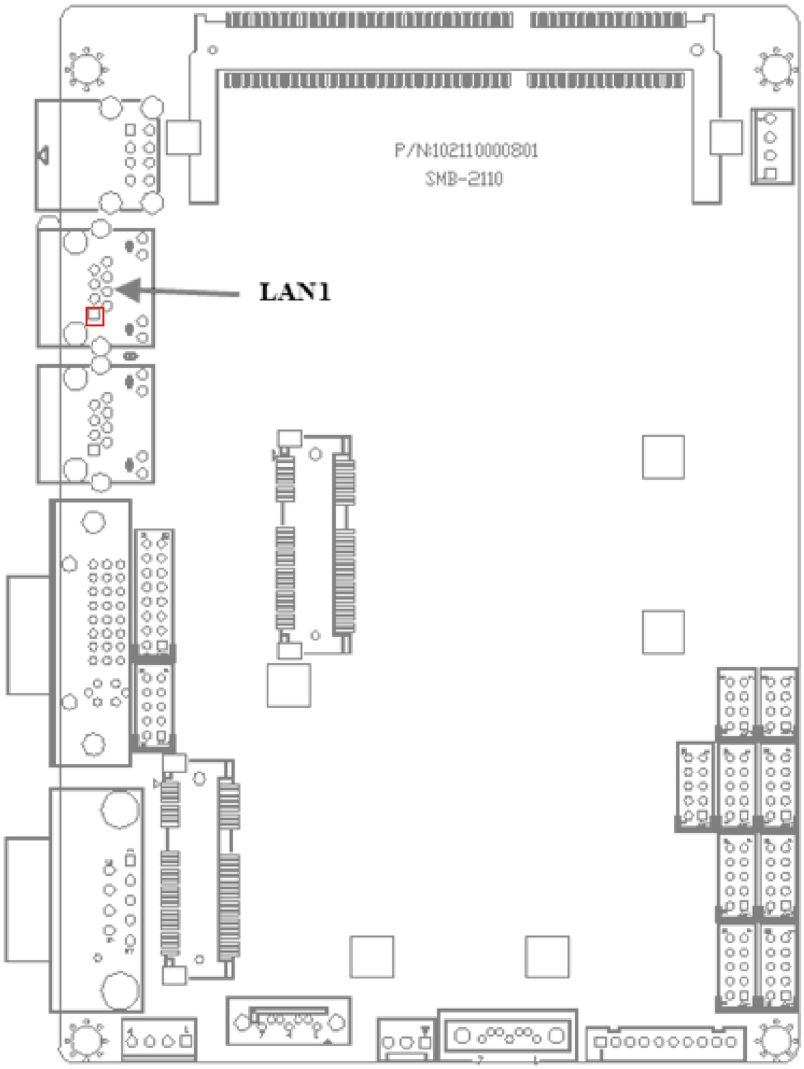
<table>
<tr><th colspan="5">USB connector</th></tr>
<tr><td>Connector size</td><td colspan="4">8 Pin</td></tr>
<tr><td>Connector type</td><td colspan="4">Type A</td></tr>
<tr><td>Connector location</td><td colspan="4">USB1</td></tr>
<tr><td rowspan="5">Connector pin definition</td><td>Pin</td><td>Signal</td><td>Pin</td><td>Signal</td></tr>
<tr><td>1</td><td>5VSB</td><td>2</td><td>USB7_N</td></tr>
<tr><td>3</td><td>USB7_P</td><td>4</td><td>GND</td></tr>
<tr><td>5</td><td>5VSB</td><td>6</td><td>USB0_N</td></tr>
<tr><td>7</td><td>USB0_P</td><td>8</td><td>GND</td></tr>
<tr><td>Connector map</td><td colspan="4">
</td></tr>
</table>

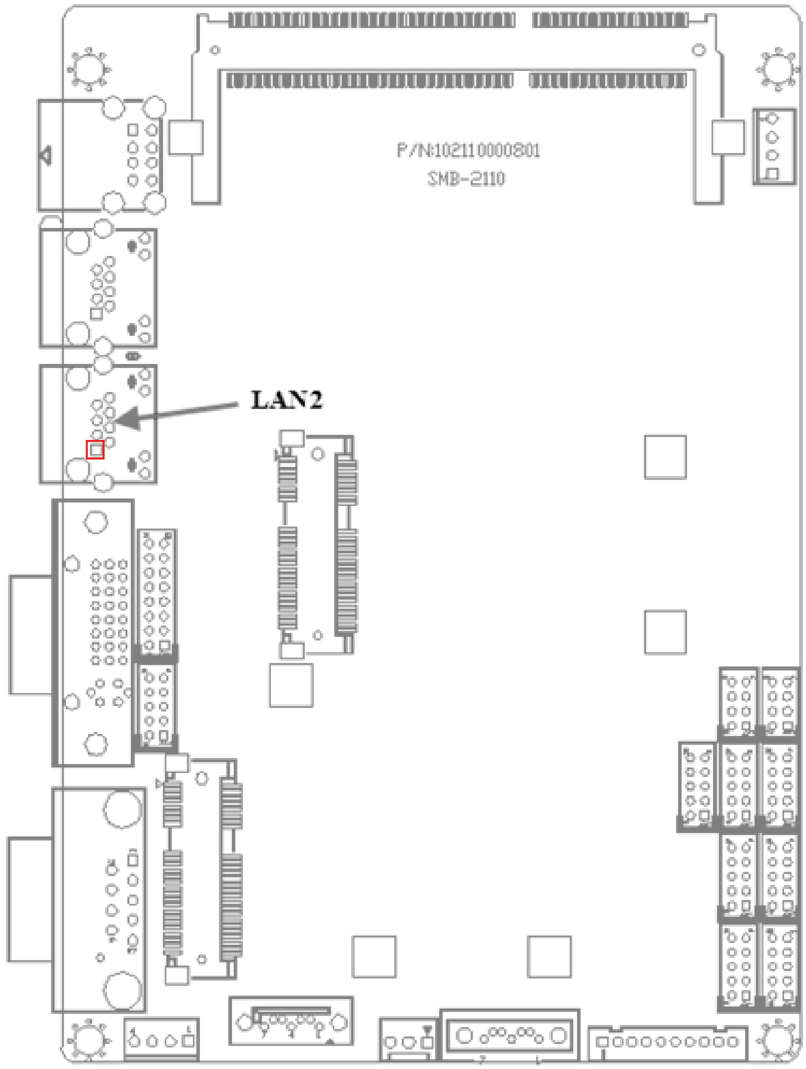
LAN connector

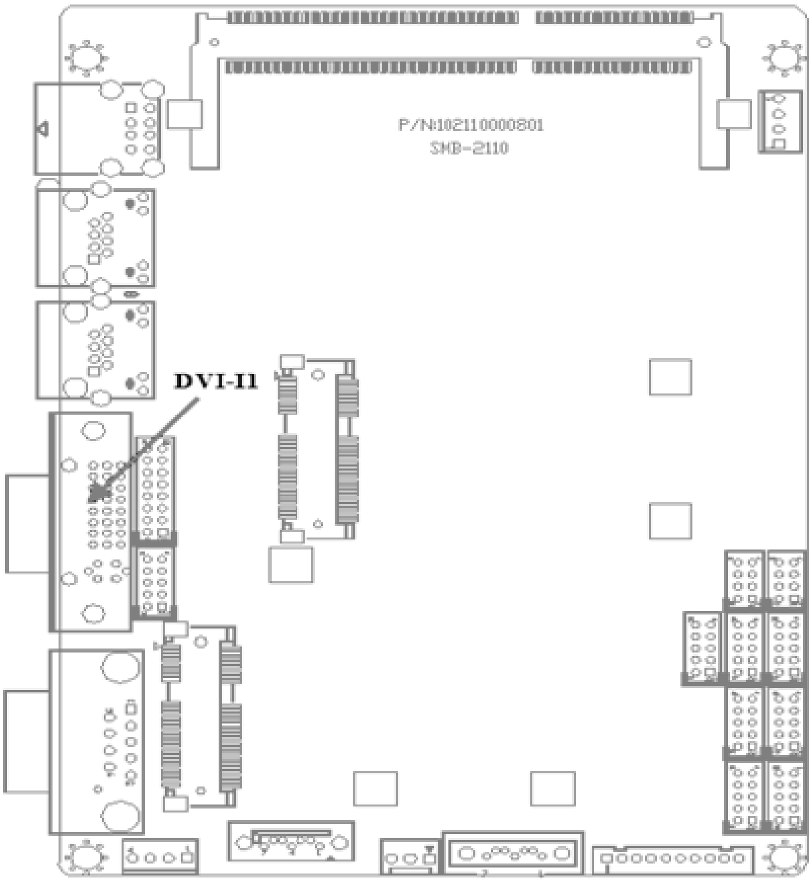
Connector size	12 Pin
Connector type	RJ45+LED
Connector location	**LAN1**
Connector pin definition	(see table below)

Pin	Signal	Pin	Signal
1	LAN0_MDI0P	2	LAN0_MDI0N
3	LAN0_MDI1P	4	LAN0_MDI2P
5	LAN0_MDI2N	6	LAN0_MDI1N
7	LAN0_MDI3P	8	LAN0_MDI3N
9	LAN0_ACT#	10	LAN0_ACTPW
11	LAN0_LINK#	12	LAN0_LINKPW

Connector map



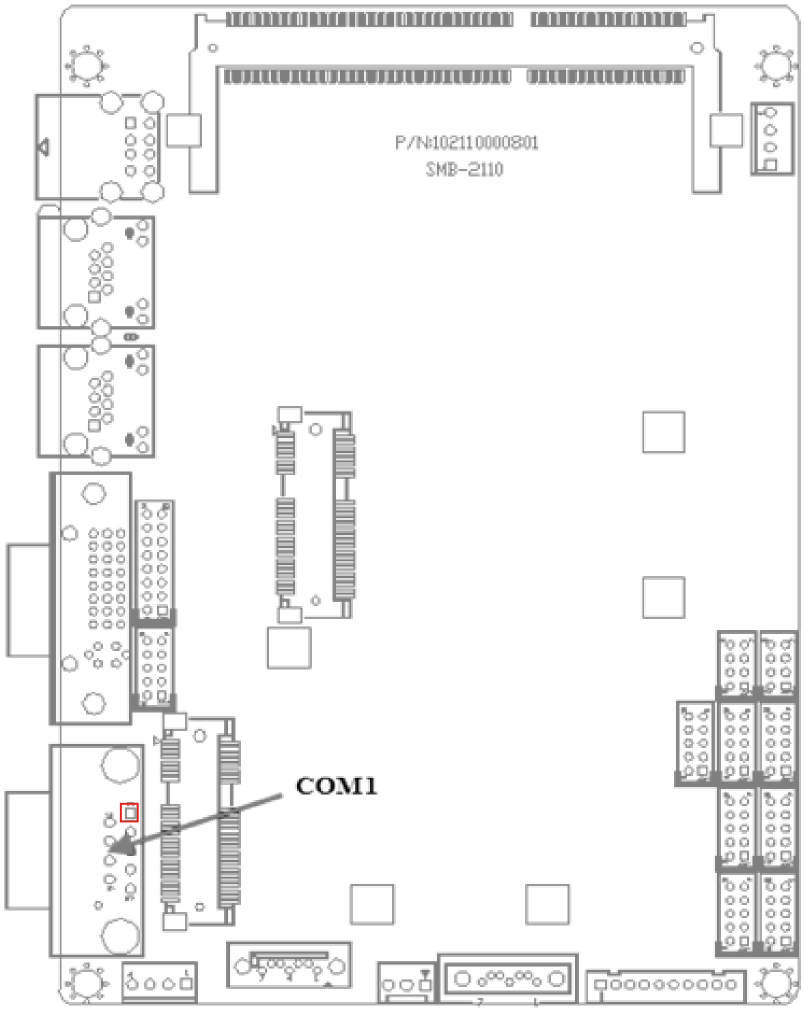
<table>
<tr><th colspan="2">LAN connector</th></tr>
<tr><td>Connector size</td><td>12 Pin</td></tr>
<tr><td>Connector type</td><td>RJ45+LED</td></tr>
<tr><td>Connector location</td><td>LAN2</td></tr>
<tr><td>Connector pin definition</td><td>
<table>
<tr><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>LAN1_MDI0P</td><td>2</td><td>LAN1_MDI0N</td></tr>
<tr><td>3</td><td>LAN1_MDI1P</td><td>4</td><td>LAN1_MDI2P</td></tr>
<tr><td>5</td><td>LAN1_MDI2N</td><td>6</td><td>LAN1_MDI1N</td></tr>
<tr><td>7</td><td>LAN1_MDI3P</td><td>8</td><td>LAN1_MDI3N</td></tr>
<tr><td>9</td><td>LAN1_ACT#</td><td>10</td><td>LAN1_ACTPW</td></tr>
<tr><td>11</td><td>LAN1_LINK#</td><td>12</td><td>LAN1_LINKPW</td></tr>
</table>
</td></tr>
<tr><td>Connector map</td><td>
</td></tr>
</table>

DVI-I connector	
Connector size	50 Pin
Connector type	DVI-I
Connector location	**DVI-I1**
Connector map	

COM connector	
Connector size	9 Pin
Connector type	DB9
Connector location	**COM1**
Connector pin definition	(see below)

Pin	Signal		
	RS232	RS422	RS485
1	COM1_DCD	TXD-	TXD-/RXD-
2	COM1_RXD	TXD+	TXD+/RXD+
3	COM1_TXD	RXD+	NC
4	COM1_DTR	RXD-	NC
5	GND	GND	GND
6	COM1_DSR	NC	NC
7	COM1_RTS	NC	NC
8	COM1_CTS	NC	NC
9	COM1_RI	NC	NC

Connector map



■ 1.8 Ignition Power Management Quick Guide

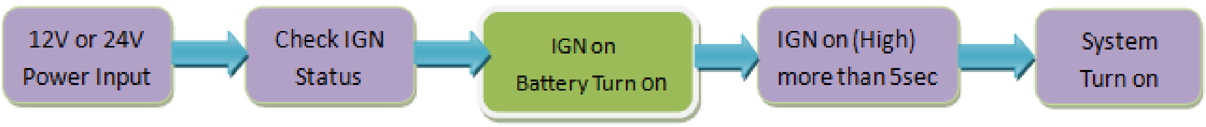
Startup/shutdown conditions from the IGNITION signal :

1. IGNITION startup signal must be valid during 10 sec. (anti noise protection).
2. IGNITION shutdown – IGNITION signal must be inactive during 5 minutes, then PIC controller initiate Power Button signal (OS must be set to shutdown from the Power Button). It generate Main Button shutdown event and then goes to complete power off.

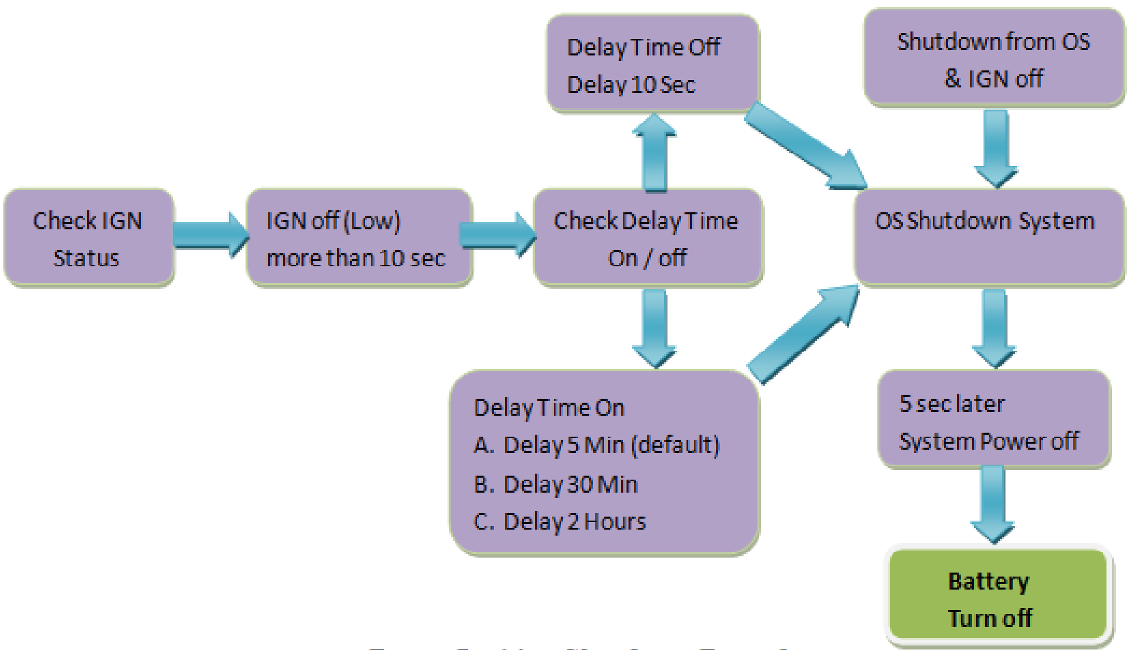
Typically the system can start only from IGNITION signal, because startup PIC controller is disconnected from the power source.

The system can be switched off from:

1. Power IGNITION OFF signal.
2. ACPI OS shutdown
3. Power Button - generate ACPI event (OS Dependent)



Power Ignition Startup Procedure



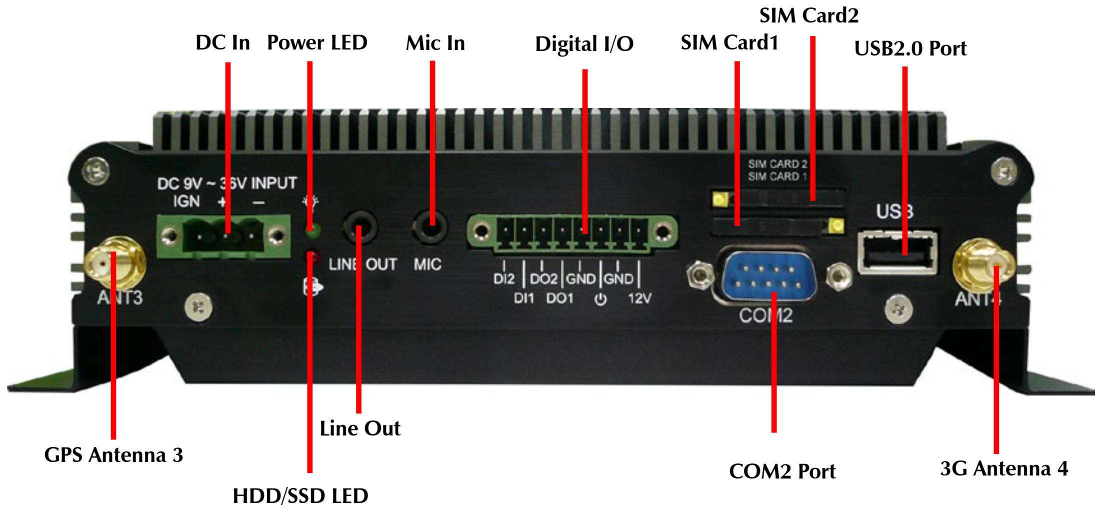
Power Ignition Shutdown Procedure

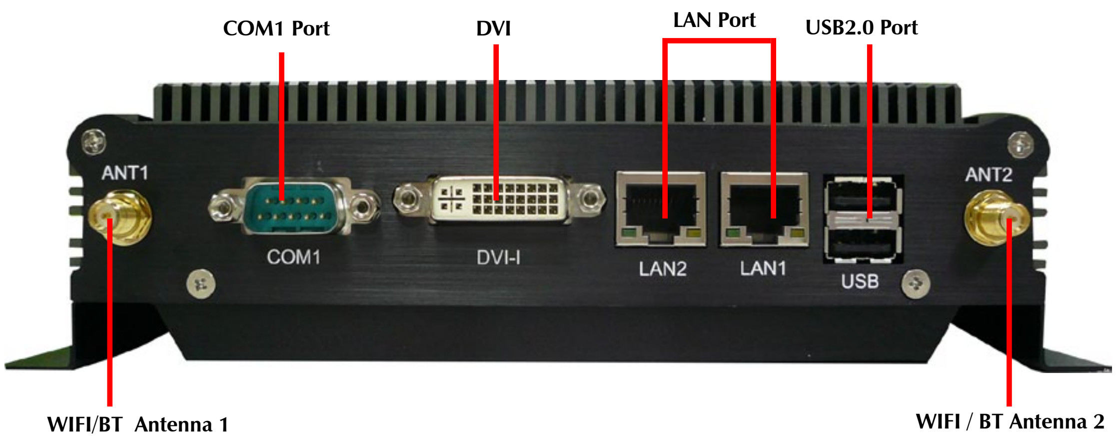
Power Management

1. Power-off delay time is selectable by BIOS to disable and enable in 5 mins / 30mins / 2Hrs (Default is 5 mins).
2. Ignition On/Off status detectable by SW
3. If the ignition is off and the system is still on after 5 minutes, VBOX-3110 will shut down automatically.
4. If the ignition is turned on again and the power-off delay is in progress, VBOX-3110 will cancel the delay function and will continue to operate normally.
5. If the ignition is turned on again and the power-off delay ended, VBOX-3110 will shut down completely will power-on again automatically.

2 System Installation

■ 2.1 System Introduction





■ 2.2 Opening Chassis

Step 1. Unscrew the four screws of the Back Cover as shown in the picture.



Step 2. Unscrew the four screws of Rear/Front Panel as shown in the picture.



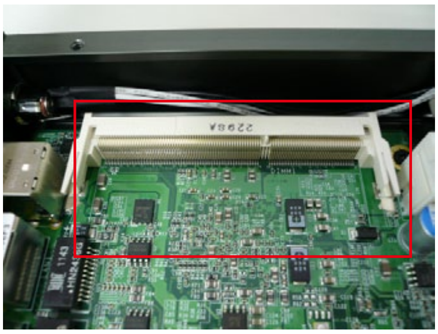


Step 3. Open the Back Cover as shown in the picture.



■ 2.3 Installing Memory

Step 1. Put Memory on this place as shown in the picture.



Step 2. Hold the Memory with its notch aligned with the Memory socket of the board and insert it at a 30-degree angle into the socket as shown in the picture.



Step 3. Fully insert the module into the socket until a “click” is heard as shown in the picture.



Step 4. Press down on the Memory so that the tabs of the socket lock on both sides of the module as shown in the picture.

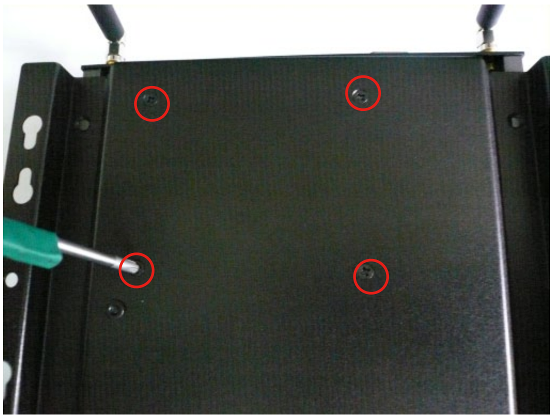


■ 2.4 Installing HDD / SSD

Step 1. Put the HDD on the Back Cover as shown in the picture.



Step 2. Turn over the Back Cover and screw the four screws of the Back Cover as shown in the picture.



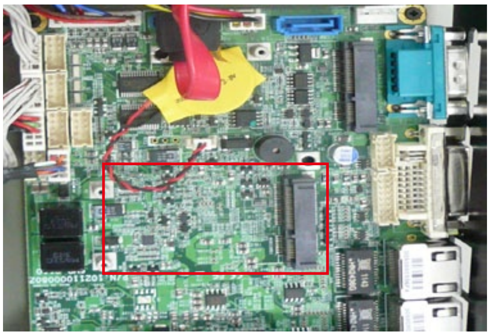
Step 3. Connect the HDD power cable and SATA cable to HDD as shown in the picture.



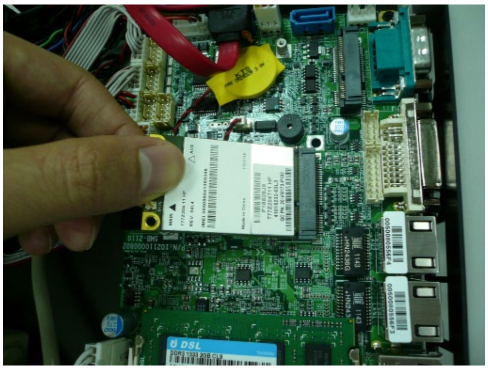
English

■ 2.5 Installing MINI PCI Express Expansion Card

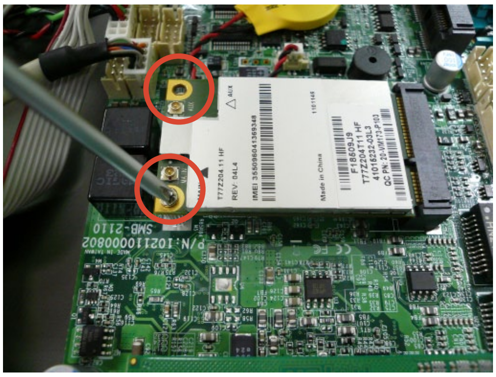
Step 1. Put MINI PCIe Expansion Card on this place as shown in the picture.



Step 2. Hold the Module with its notch aligned with the socket of the board and insert it at a 30 degree angle into the socket as shown in the picture.



Step 3. Screw two screws to the holder as shown in the picture.

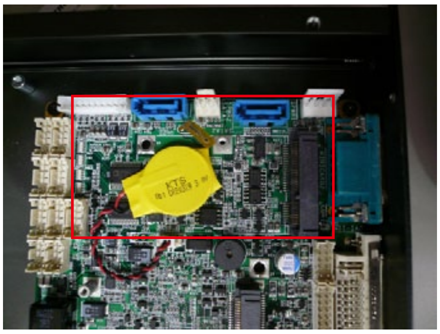


Step 4. Done as shown in the picture.



■ 2.6 Installing MINI PCI Express Expansion Card

Step 1. Put MINI PCIe Expansion Card on this place as shown in the picture.



Step 2. Hold the Module with its notch aligned with the socket of the board and insert it at a 30 degree angle into the socket as shown in the picture.



Step 3. Screw one screw to the holder as shown in the picture.



Step 4. Done as shown in the picture.



■ 2.7 Installing SIM Card

Step 1. Use thin stick to push the button as shown in the picture.



Step 2. Take the holder away from VBOX-3110 as shown in the picture.



Step 3. Put your SIM Card into the holder as shown in the picture.



Step 4. Take the SIM card holder and Insert it into the socket as shown in the picture.

Step 5. Done.

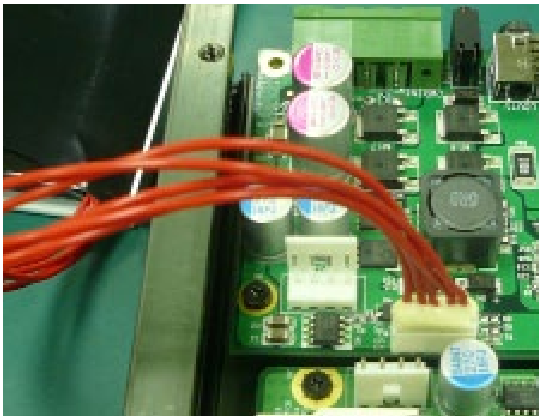


■ 2.8 Installing Battery Module

Step 1. Screw two screws on the back cover as shown in the picture.



Step 2. Connect the Cable to UPS1 Connector as shown in the picture.



3 BIOS

■ 3.1 Entering The BIOS

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press (DEL) key to enter Setup.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Important

- The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.
- Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format.

VBOX-3110 Mainboard V1.0 073109 where :

1st digit refers to BIOS maker as A = AMI, W = AWARD, and P = PHOENIX

2nd - 5th digit refers to the model number.

6th digit refers to the chipset as I = Intel, N = NVIDIA, A = AMD and V = VIA.

7th - 8th digit refers to the customer as MS = all standard customers.

V1.0 refers to the BIOS was released.

073109 refers to the date this BIOS was released.

Control Keys

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press (DEL) key to enter Setup.

Key	Function
<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General Help
<F3>	Load Optimized Defaults
<F4>	Save all the CMOS changes and exit

Getting Help

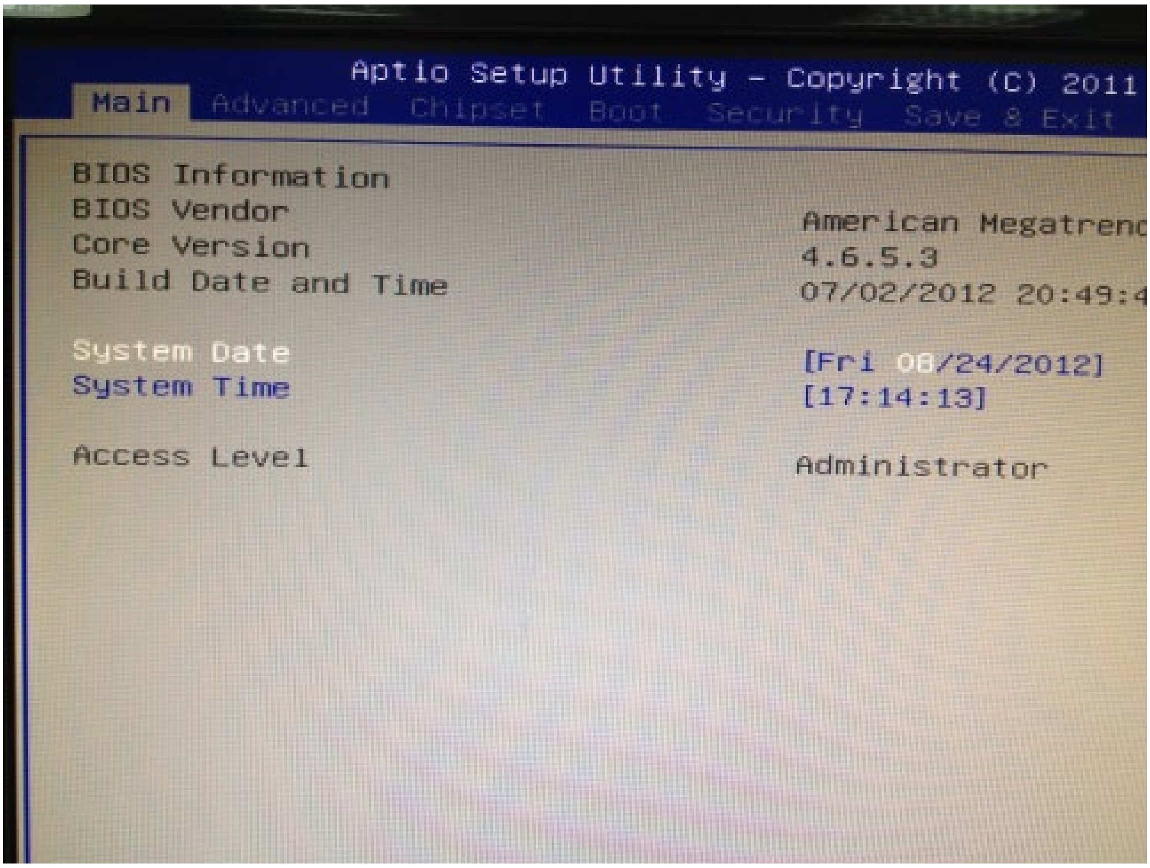
After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu
The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu
If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

General Help <F1>
The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

■ 3.2 Main



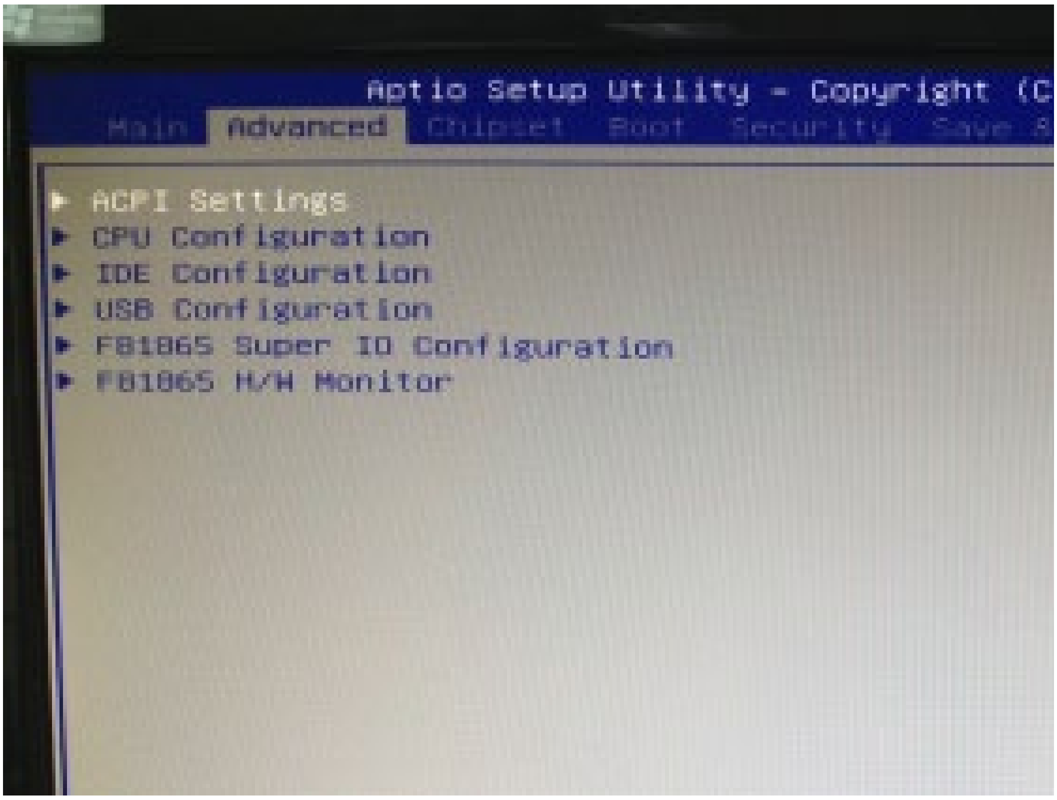
System Time

This setting allows you to set the system time. The time format is <Hour> <Minute> <Second>.

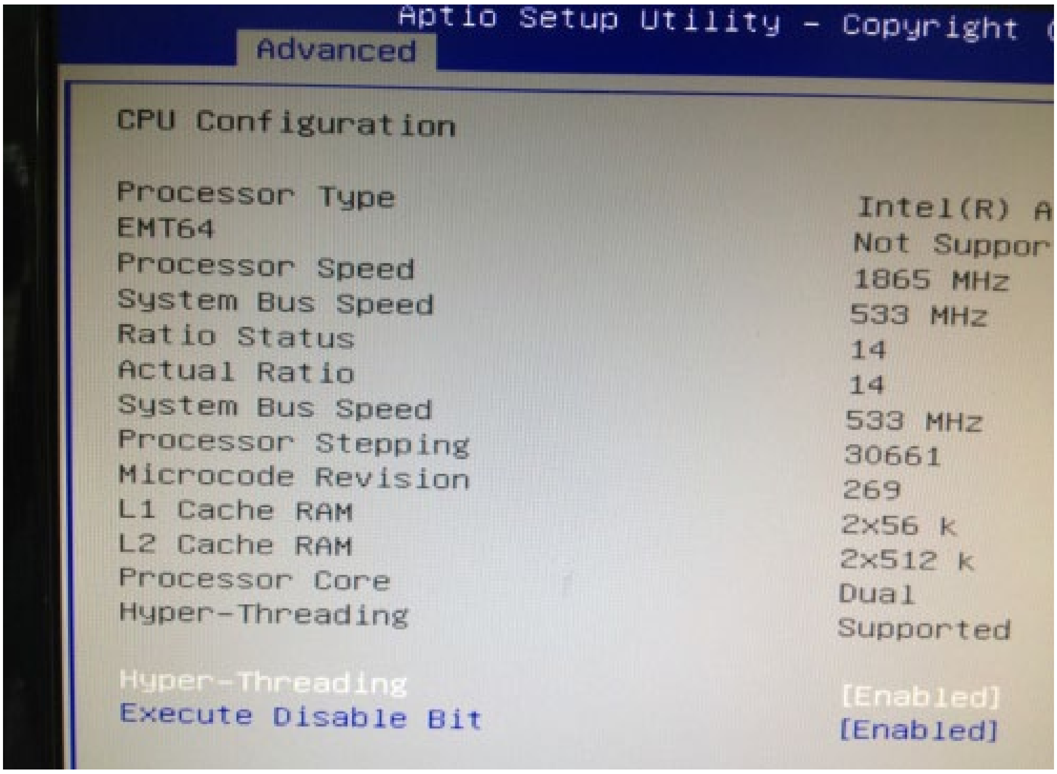
System Date

This setting allows you to set the system Date. The time format is <Day> <Month> <Date> <Year>.

■ 3.3 Advanced



☞ CPU Configuration



» Max CPUID Value Limit

The Max CPUID Value Limit BIOS feature allows you to circumvent problems with older operating systems that do not support the Intel Pentium 4 processor with Hyper-Threading Technology. When enabled, the processor will limit the maximum CPUID input value to 03h when queried, even if the processor supports a higher CPUID input value. When disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

» Execute Disable Bit Capability

Intel's Execute Disable Bit functionality can prevent certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system. This functionality allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation.

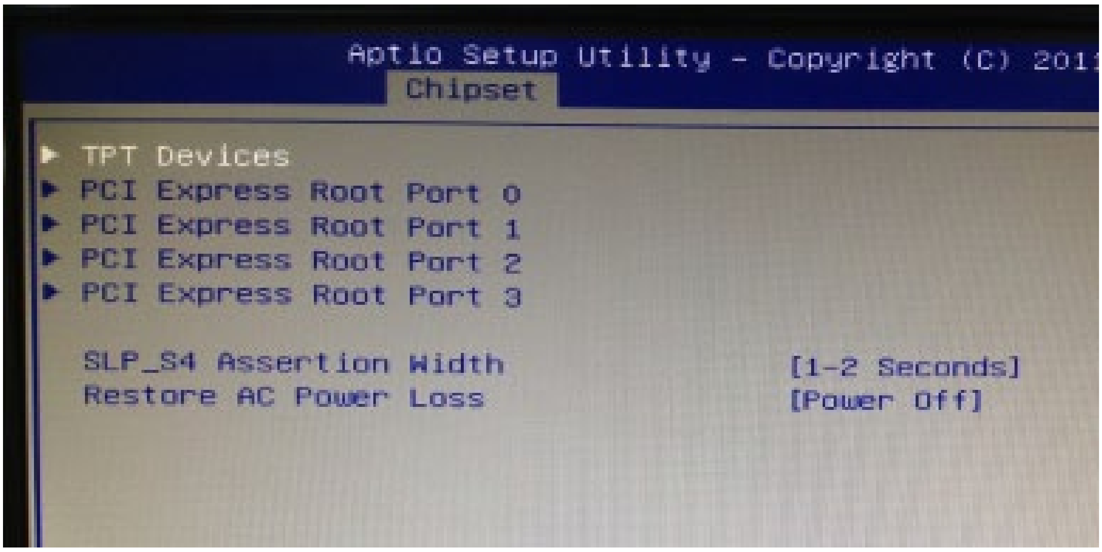
» Hyper Threading Technology

The processor uses Hyper Threading technology to increase transaction rates and reduces end-user response times. The technology treats the two cores inside the processor as two logical processors that can execute instructions simultaneously. In this way, the system performance is highly improved. If you disable the function, the processor will use only one core to execute the instructions. Please disable this item if your operating system doesn't support HT Function, or unreliability and instability may occur.

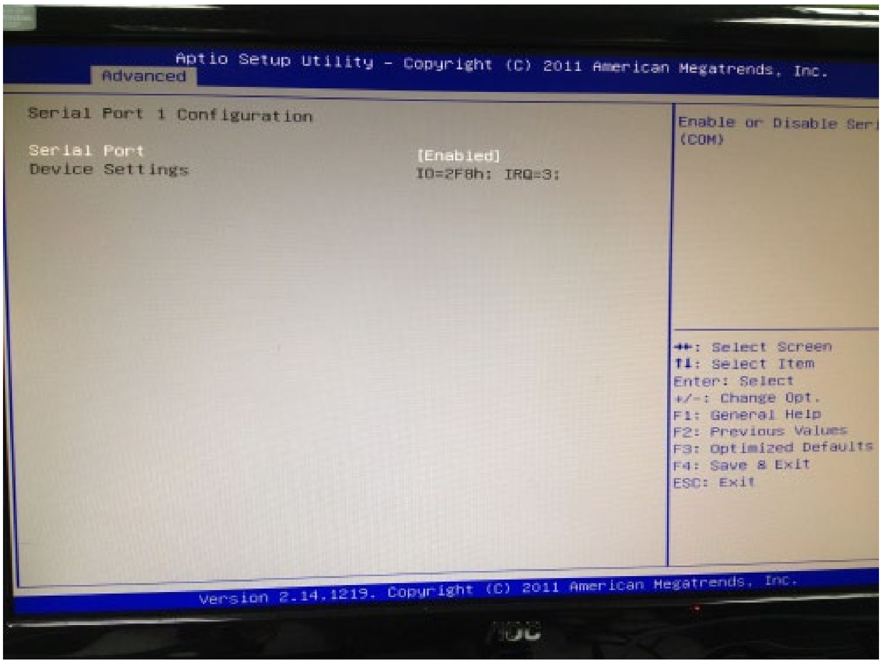
» Intel(R) SpeedStep(tm) Tech

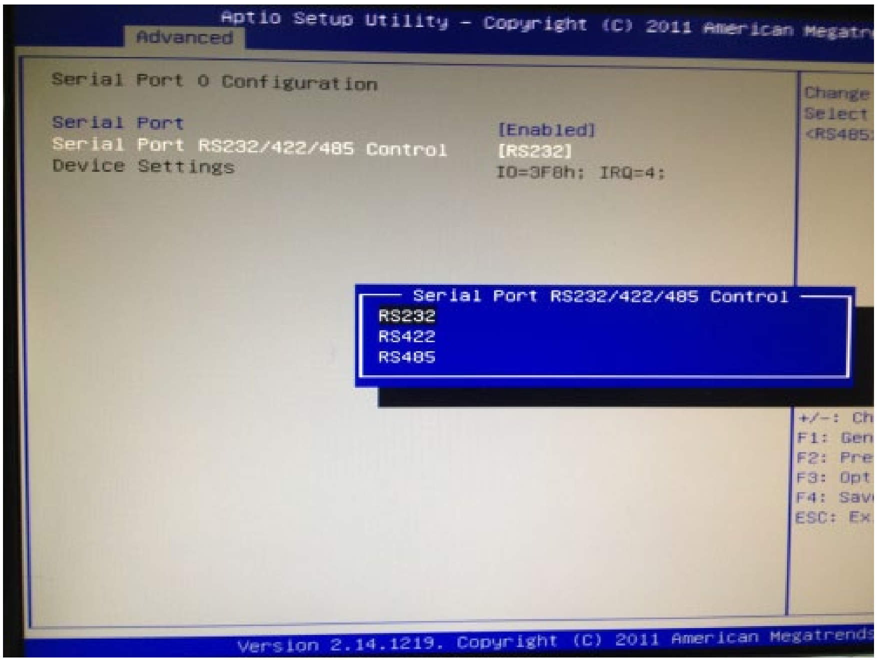
EIST (Enhanced Intel SpeedStep Technology) allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production..

☞ PCI/ PCIE Device Configuration



☞ Super IO Configuration





» Serial Port 0/1/2/3/4/5 Enable or Disable

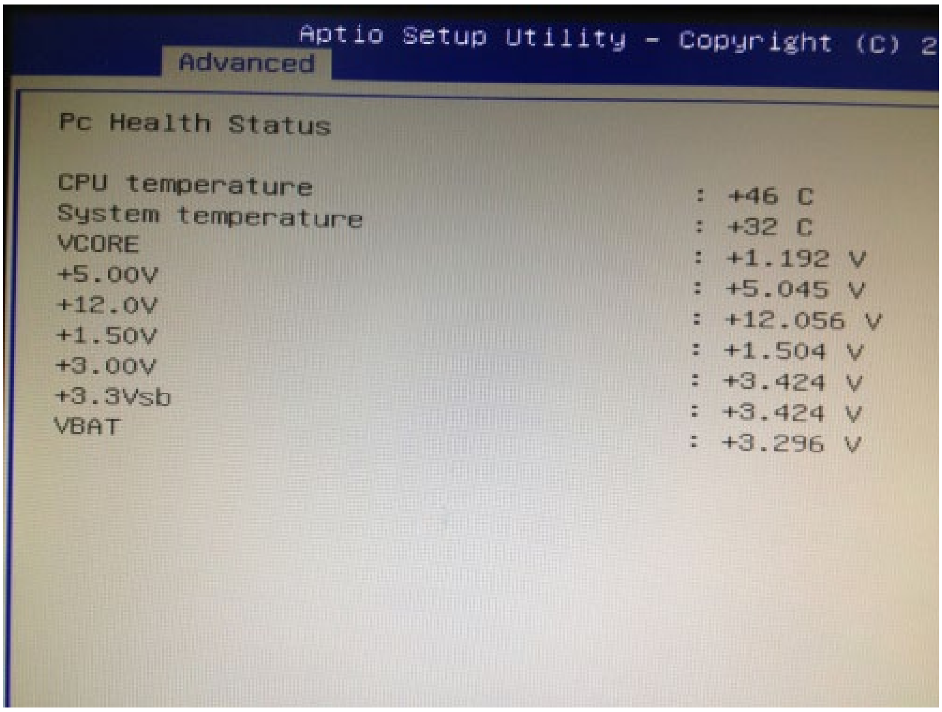
Select an Enable or Disable for the specified serial ports.

» Serial Port 0 Mode

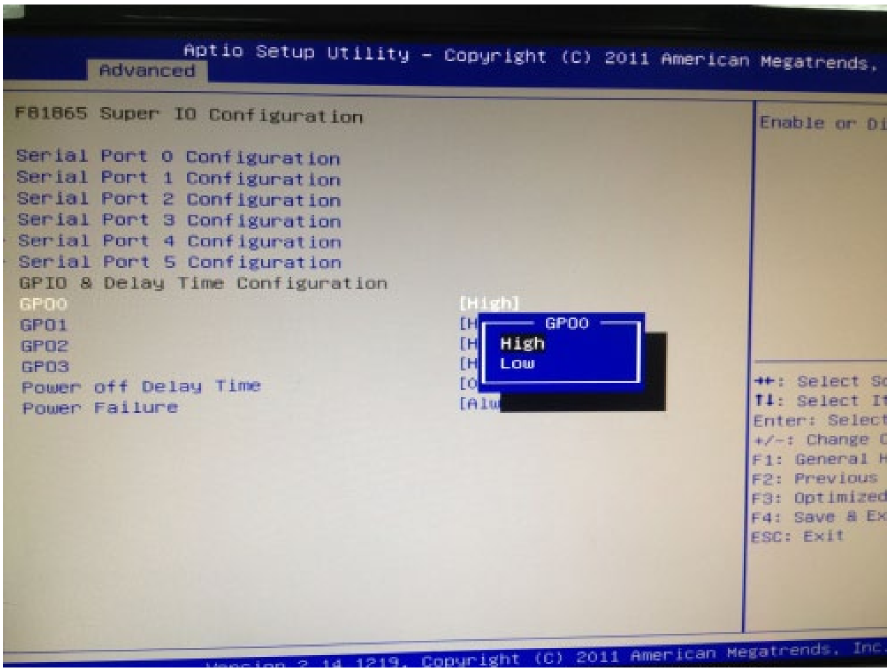
The settings specify the RS-232/RS-422/RS-485 mode of the serial prot 0.

☞ Hardware Health Configuration

These items display the current status of all monitored hardware devices/components such as voltages, temperatures and all fans' speeds.



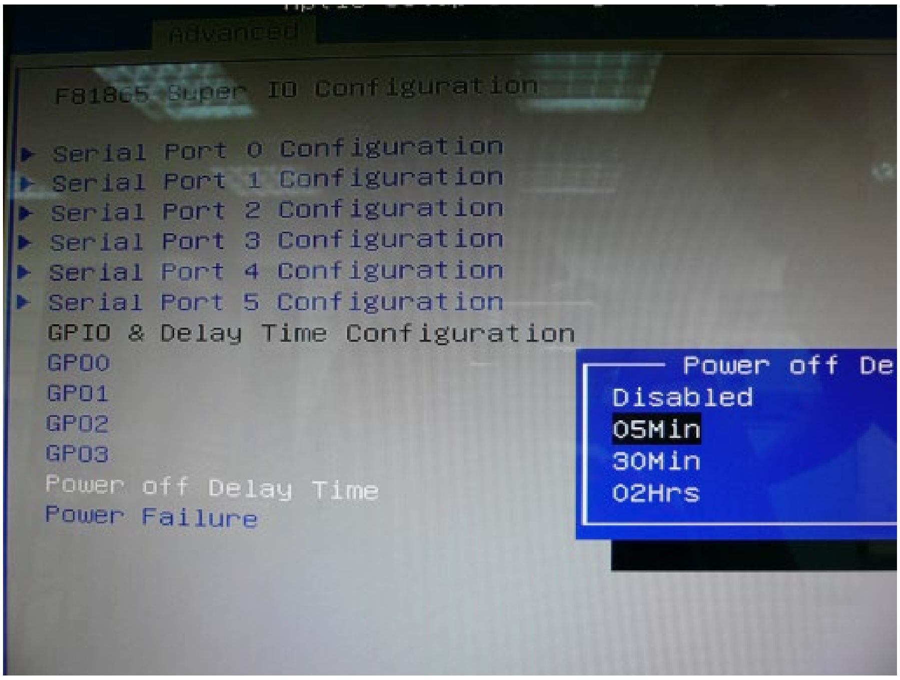
☞ GPIO Configuration



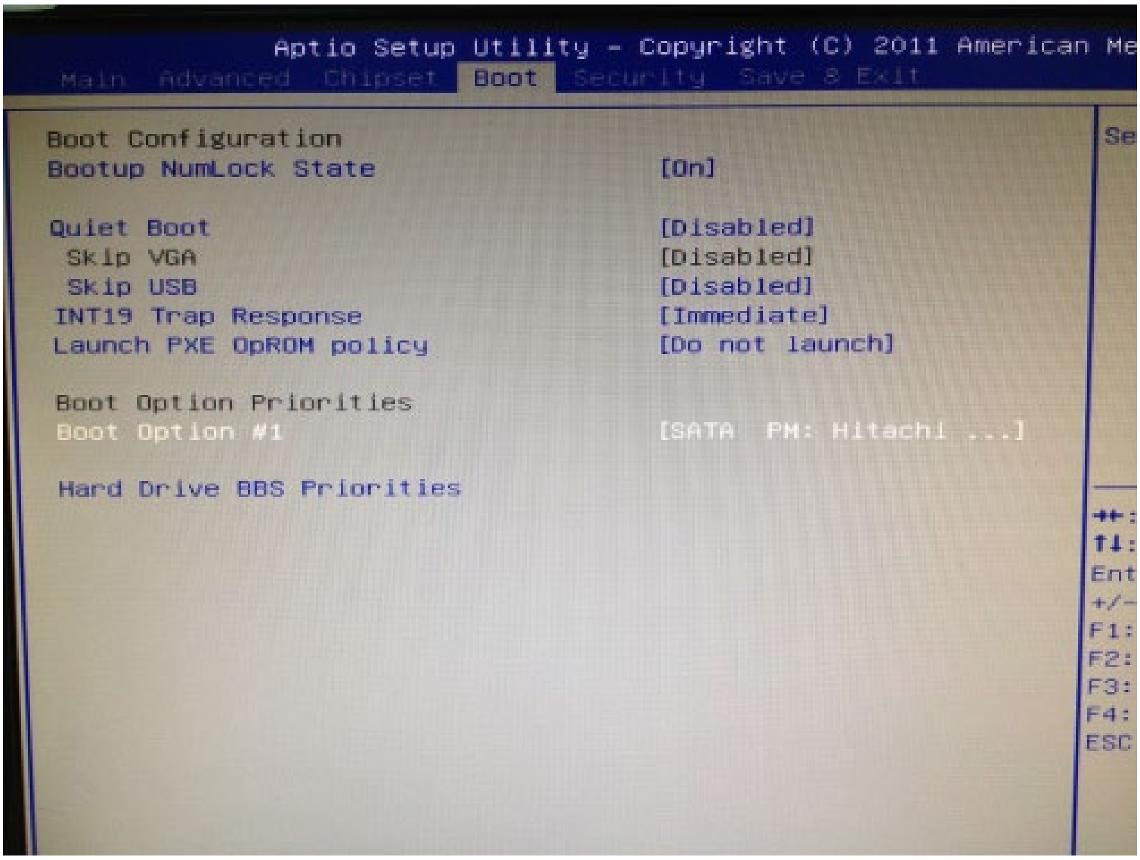
» GPO 0/ 1/ 2/ 3/ Data

These settings configure special GPIO data.

☞ Power off Delay Time Setting



■ 3.4 Boot



» 1st/2nd/3rd Boot Device

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

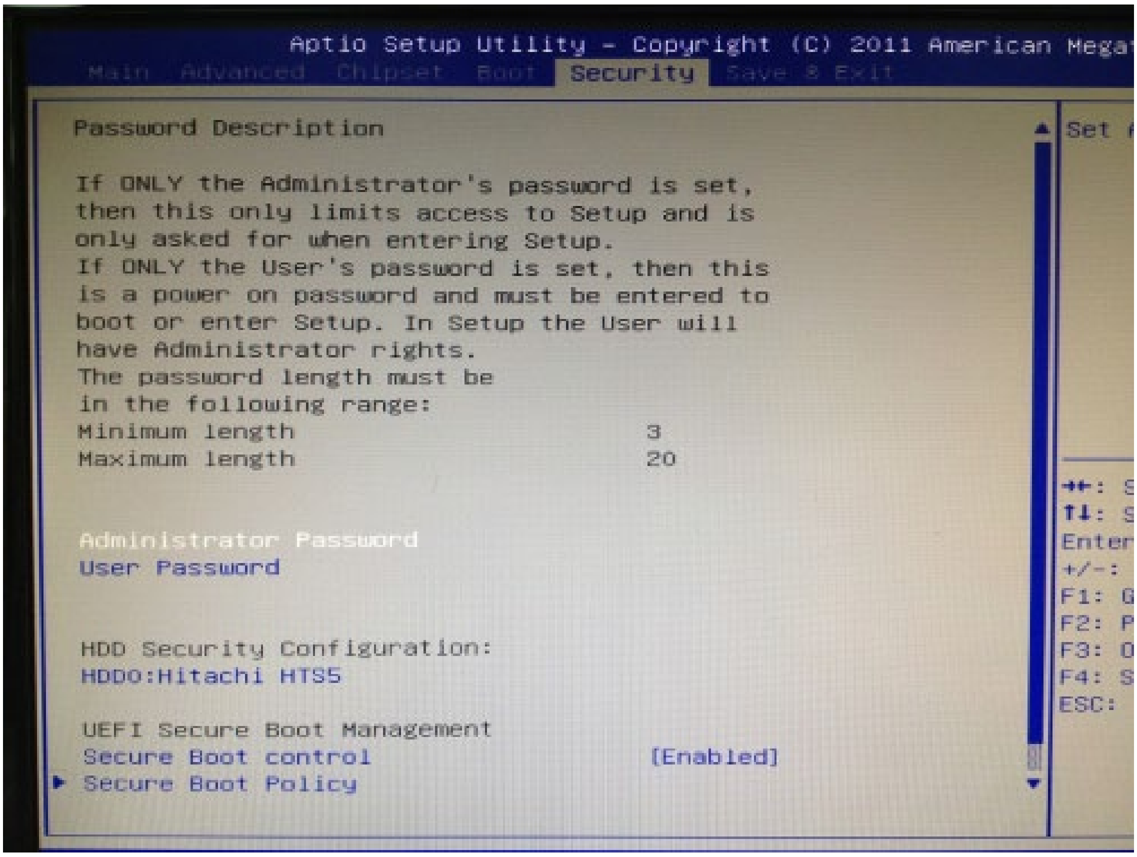
» Try Other Boot Devices

Setting the option to [Enabled] allows the system to try to boot from other device if the system fail to boot from the 1st/2nd/3rd boot device.

» Hard Disk Drives, CD/DVD Drives, USB Drives

These settings allow you to set the boot sequence of the specified devices.

■ 3.5 Security



» Administrator Password

Administrator Password controls access to the BIOS Setup utility. These settings allow you to set or change the administrator password.

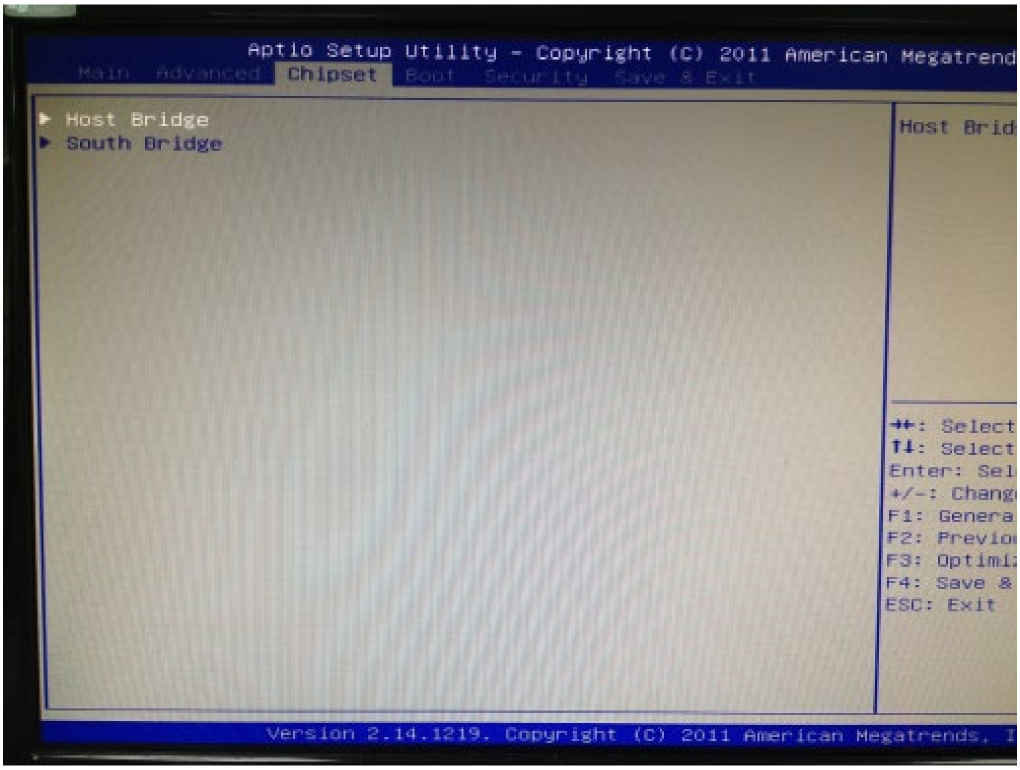
» User Password

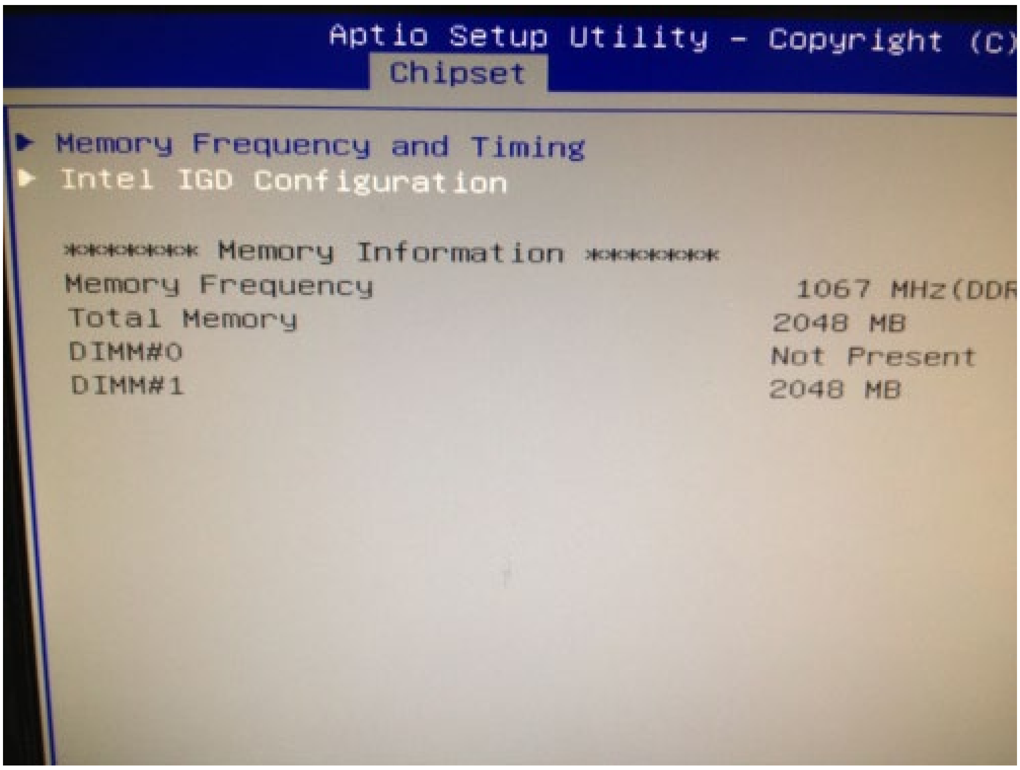
User Password controls access to the system at boot. These settings allow you to set or change the user password.

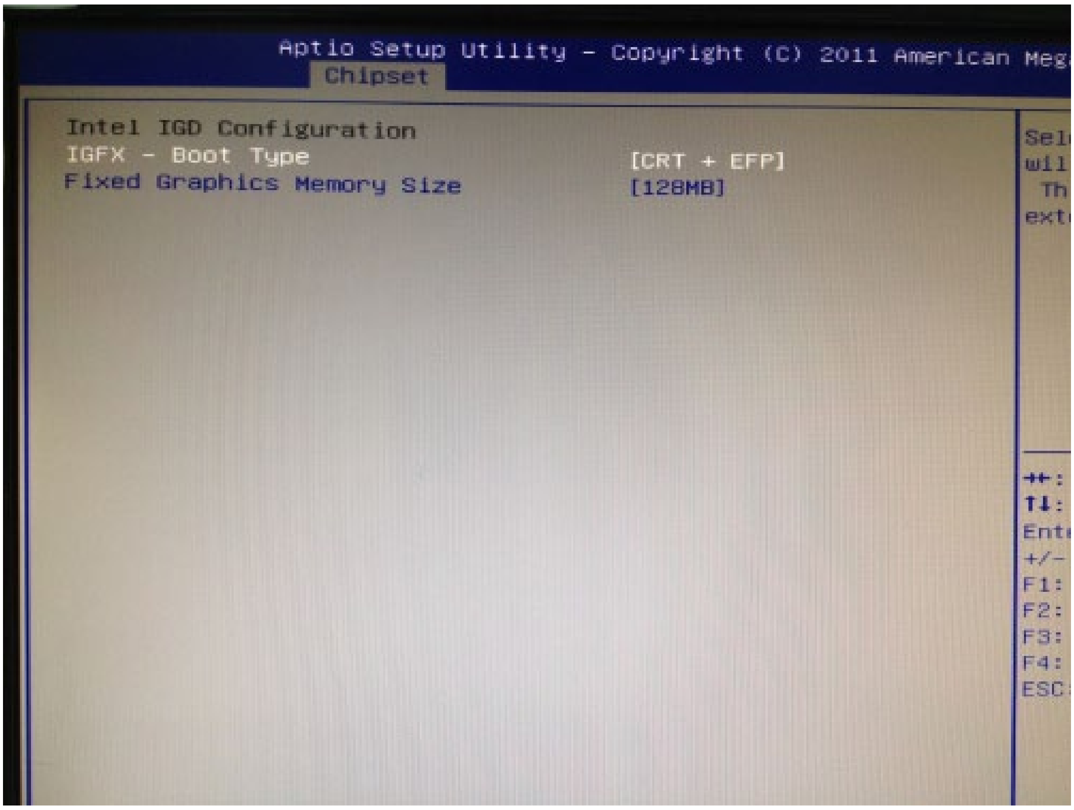
» Boot Sector Virus Protection

This function protects the BIOS from accidental corruption by unauthorized users or computer viruses. When enabled, the BIOS data cannot be changed when attempting to update the BIOS with a Flash utility. To successfully update the BIOS, you will need to disable this Flash Protection function.

■ 3.6 Chipset

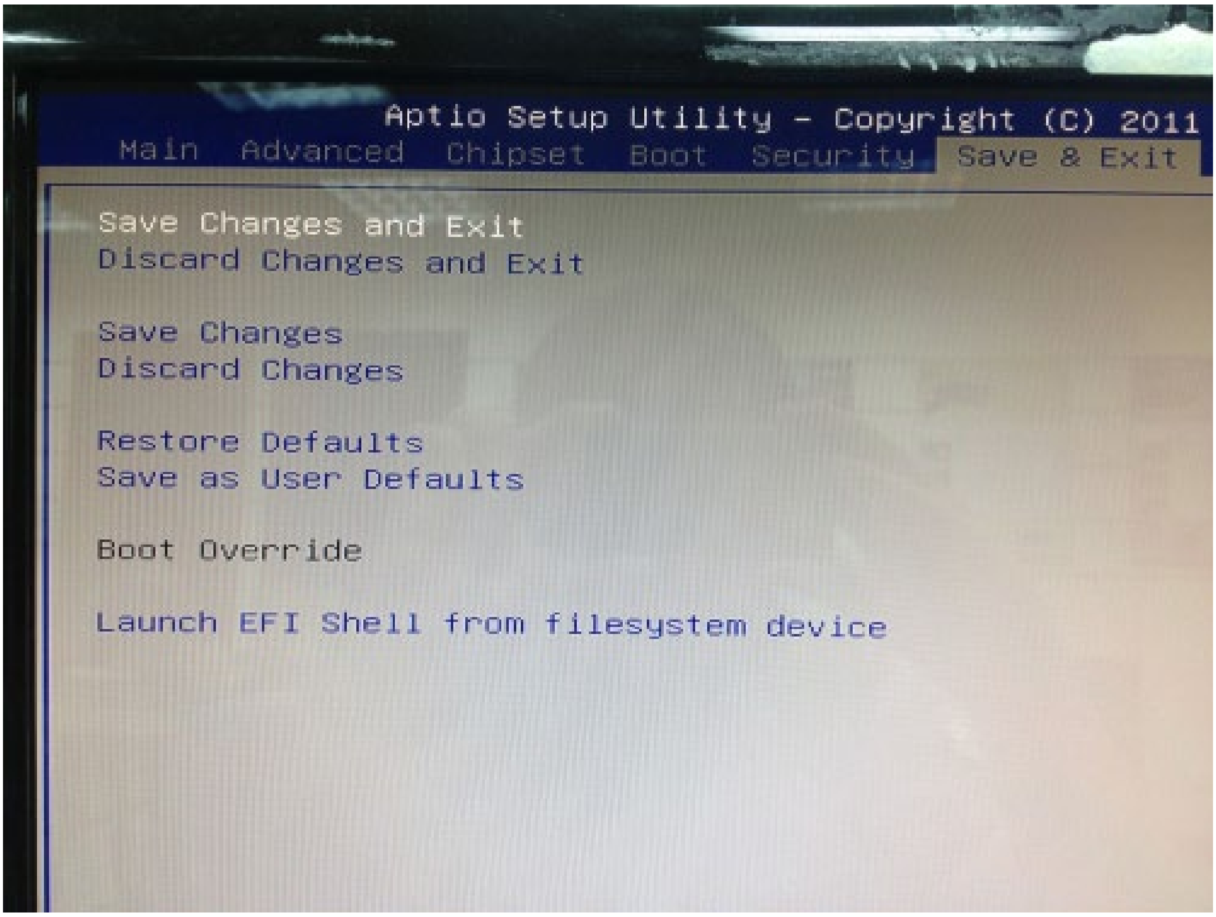

Aptio Setup Utility - Copyright (C) 2011 American Megatrend
Main Advanced Chipset Boot Security Save & Exit
Host Bridge
South Bridge
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends,


Aptio Setup Utility - Copyright (C)
Chipset
Memory Frequency and Timing
Intel IGD Configuration
******** Memory Information ********
Memory Frequency
Total Memory 2048 MB
DIMM#0 Not Present
DIMM#1 2048 MB



» **Select Graphic Output Mode**

■ 3.7 Exit



» Save Changes and Exit

Save changes to CMOS and exit the Setup Utility.

» Discard Changes and EXit

Abandon all changes and exit the Setup Utility.

» Discard Changes

Abandon all changes and continue with the Setup Utility.

» Load Optimal Defaults

Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

» Load Failsafe Defaults

Use this menu to load the default values set by the BIOS vendor for stable system performance.

4 Packing List

■ 4.1 Packing List

Part Number	Module Name
762120011000	SBOX-3110
326710039661	CABLING PHOENIX CON MALE 3PIN
324610088661	CABLING PHOENIX CON MALE 8PIN
Option	
514001105200	Memory 1GB SO-DIMM DDR3 1333
514002105200	Memory 2GB SO-DIMM DDR3 1333
514004105200	Memory 4GB SO-DIMM DDR3 1333
521340012200	HDD WD 160GB SATA HDD / 5400/8MB/12ms , 9.5mm
521370012200	HDD WD 320GB SATA HDD / 5400/8MB/12ms , 9.5mm
523140012040	2.5" SSD 16GB SSD (MLC Type)
523310010900	2.5” SSD 32GB SSD (MLC Type)
523320012010	2.5” SSD 64GB SSD (MLC Type)
534002150400	SATA DOM 2GB SATA DOM(SLC Type)
534004150400	SATA DOM 4GB SATA DOM(SLC Type)
534008150400	SATA DOM 8GB SATA DOM(SLC Type)
573000011093	3G / GPS HSPA/UMTS –800/850/900/1900/2100MHz Quad-band EDGE/GPRS/GSM –850/900/1800/1900MHz Single-band CDMA –1900MHz GPS is Standalone, gpsOne XTRA assistance for enhanced standalone GPS performance, MS-based assisted (support varies based on network carrier)
570802090040	WiFi /BT Ralink(RT3090BC4) 1X1 802.11n, Wireless Lan and CSR Bluecore4 Bluetooth2.1+EDR (Microsoft in-box driver, profiles;Motorola profiles) / software upgradable to BT3.0+HS(Motorola) Combo Mini card
570800100100	Embedded u-blox6 GPS Mini PCIe Card •50-channel u-blox6 Engine with Over 2 Million Effective Correlators •-147dBm SuperSense® Acquisition and Tracking Sensitivity •AssistNow Online and Offline A-GPS Services,OMA SUPL Compliant •5 Hz Position Update Rate •Standard Mini PCIe V1.2 Full-Mini Card (USB 2.0 Interface) •Time To First Fix (TTFF) : <1 sec •Operating Temp. : -40ºC to 85ºC

Part Number	Module Name
570800100101	Embedded u-blox6 GPS with **Dead Reckoning** Mini PCIe Card •50-channel u-blox6 Engine with Over 2 Million Effective Correlators •-146dBm SuperSense® Acquisition and Tracking Sensitivity •AssistNow Online and Offline A-GPS Services,OMA SUPL Compliant •100% Coverage with Continuous Position Fixes Even in Tunnels •Highly Accurate and Reliable Navigation Performance •Automatic Sensor Calibration and Temperature •Operating Temperature : -40ºC to 85ºC
570802010062	WiFi QCOM Ralink 802.11b/g/N, 2T2R Mini PCIe
221401280005	BAT-3000 800mAH 3S1P for VBOX-3xxx
548201206001	Power Adapter 12V/5A 60W Jack
342221832010	Power Cord (EU Type)
342221832000	Power Cord (US Type)
972009720000	Microsoft Windows Embedded Standard 2009 (Windows XP Embedded)
970007740000	Windows® Embedded Standard 7 Runtime (WS7E)(ESD)